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Surtax Reduction a Business Necessity

OF ALL the oppressive taxes that have beset the American people none has proved a greater barnacle on national industry than the high surtax. This "tax upon a tax" was wished upon the country in 1913 with the income tax scheme, with a moderate maximum of 10 per cent. When the nation went to war in 1917 it rose to 65 per cent. In 1921 it was brought down to 50 per cent. Now in 1924 the Secretary of the Treasury, with the President concurring, urges a reduction to a 25 per cent maximum, while a majority in Congress seems bent on a compromise with a 37½ per cent limit. Secretary Mellon, than whom none is perhaps better informed on the matter, declares that his proposition is not only a move toward promised peacetime taxation but is designed to greatly encourage industrial activity, as well as to keep the surtax from steadily diminishing. Paradoxical as it may seem, the tendency of this tax is not to yield a rising revenue and keep pace with the growth of the nation, as its framers had calculated, but to actually dry up the sources.

Most industrial leaders hold that nothing is more imperatively required to advance the general welfare than a radical revision of Federal taxes, and decidedly downward in the case of the surtax. Their sentiments but reecho those of every secretary of the treasury since the end of the war. A high surtax menaces industry by inducing that depressing condition in the financial world where creditors multiply and partners become fewer. It discourages commercial initiative and artificially restrains production by, for instance, making investment in tax-exempt securities more profitable than those of even the best rated industrial and transportation concerns. What investor prefers to pay out 50 per cent of his income in surtax, in addition to 8 per cent normal tax, when he can escape the heavier levy by putting his money in state, county, or city bonds, instead of an industrial venture?

Capital can no more than labor be forced to work against its will. No tax which is practically confiscatory can promote prosperity; and the present high maximum surtax is just such a deterrent to our industrial growth.

Business men should realize how much they have at stake, and frankly advise their representatives at Washington. Congress may be very impatient of executive urging and loath to relinquish in even a minor degree its constitutional prerogative to frame all revenue-raising legislation, but most of its members are not heedless of the wishes and opinions of their constituents. On the eve of a great election the views of voters loom large.

The Father of Planted Hevea

THAT the British were the original successful producers of plantation Hevea is not likely to be questioned. As to which of the many distinguished botanists, collectors and agricultural experts first advocated Hevea planting there seems to be doubt.

Considered historically and listing only English writers, descriptions of the Hevea, with often full reports accompanied by sketches of leaves, flowers and fruit, were published as follows:

1847—A voyage up the River Amazon:—Edwards.

1853—Travels on the Amazon and Rio Negro:—Wallace.

1854—Hookers' Journal of Botany:—Article by Spruce and letters from Spruce to James Collins.

1863—A Naturalist on the River Amazon:—Bates.

These are but a few of the many to show that the Hevea was well known and described as far back as 1847.

In 1868 Sir Clements Markham intrusted to James Collins the task of investigating and reporting upon the feasibility of growing Hevea rubber in the Far East. The Collins report was published in 1872 and was illustrated by plates from the flowers, leaves and nuts of the Hevea from the British Museum Herbarium contributed by Dr. Spruce in 1847.

James Collins also, in a paper on India-rubber delivered before the Society of Arts (*Journal of the Society of Arts*, December 17, 1869), strongly recommended the acclimatization of the *Hevea brasiliensis*.

Moreover, Sir Clements Markham in his book "Peruvian Bark" definitely states that he intrusted South American researches and investigations regarding rubber cultivation to James Collins, from whose report it was concluded that Heveas and Castilloas being superior to Ficus should be introduced into British India.

Explorer, scientist, essayist, and above all conscientious and wise administrator, Sir Clements Markham conserved and cultivated the native plants and trees in India as has never been done in any other country. He sent collectors all over the tropical world for seeds and plants. His collaborators and collectors, Cross, Collins, and Wickham, should have due credit, for the work they did was priceless. But it should be freely granted that it was Markham who first visioned the Hevea opportunity and then with quiet persistence worked until success was attained. His major triumphs were the introduction of Cinchona, and the bringing of the *Hevea brasiliensis* to the Far East.

Statistics a Government Monopoly?

ONE of the slogans on which the last national election was won was, "More business in government and less government in business;" and be it said to the credit of the administration, it has to a considerable degree, as by establishing a budget system and causing various departments to function more efficiently, shown a readiness to infuse "more business into government." It is to be regretted, however, that equal zeal has not been manifested in carrying out the second promise of the party rallying cry, "less government in business." This does not imply that proper anti-trust legislation should be ignored or annulled, or that reasonable regulation of the interstate and international activities of commercial concerns should be less sedulously enforced; but it does mean that there is still a lot of unwarranted nagging at industrialists and petty interference by officialdom with legitimate American business methods, which must cease if our industries are to be conducted on a sound, economic plane, if they are to enjoy deserved prosperity, and if they are to hold their own against considerable competition certain to materialize when Europe settles down to business.

This calls to mind a recent opinion of the Attorney General which has been construed to mean that it is illegal to issue, through other than government channels, statistics of production, consumption, and reserve stocks of raw and finished material at stated periods. The Rubber Association of America, Inc., for instance, like national organizations concerned with cotton, paper, petroleum, leather, lumber, automobile, and other great industries, has been rendering much valuable service in this direction; and it is inconceivable that such fair, impartial, disinterested assistance rendered as freely and as fully to the smallest as well as to the most powerful concerns in the trade should be curtailed, much less actually banned, lest plain truth should foster monopoly.

Do not our officials in high places realize that monopoly is promoted by secrecy rather than by sunlight; that no surer means of stabilizing industry has as yet been contrived than just such broadcasting of late, detailed, accurate information as to the state of trade; and that it is quite as effective insurance against the evils of over and under-production as is the operation of the Federal Reserve System in averting money panics? If the government would arrogate to itself the sole right to publish trade statistics, as well then might it assume exclusive control of the dissemination of all price quotations and attempt to dictate to 20,000 newspapers how they shall publish the vast amount of business information that they now impart to a hundred million people.

AS WE GO TO PRESS THE DOORS OF THE BEAUTIFUL HALL du Cinquantenaire in Brussels, Belgium, will open for the Sixth International Rubber Exhibition. A pre-view of the exhibits and a survey of the congress, essays, banquets and other features show that H. Greville Montgomery, the managing director, is keeping up the high standard set by the late Staines Manders. We wish the director and his distinguished collaborators, indeed all who contribute, the best of success in this great educational enterprise.

THE "WORLD ALMANAC" IS A VERY VALUABLE ANNUAL. For thirty-nine years it has furnished information on thousands of current topics concretely, continuously and with perspicacity. So generally does it deserve its subtitle, "Book of Facts," that its reference to rubber under the heading "Twelve Needed Inventions" comes as a shock. To quote the alleged need:

> "A process to extract phosphorus from vulcanized India rubber so that it can be boiled up and used again."

It would almost seem as if a hint of the existence of the great, successful and long established business in reclaiming vulcanized rubber should have penetrated even to the sanctum of the *World*.

For their 1925 edition may we report that sulphur, not phosphorus, is successfully extracted, vulcanized scrap "boiled" by the carload, and the product, thousands of tons annually, used with complete success. The industry in fact is some fifty years old.

"BUT HE THAT DOETH WRONG SHALL RECEIVE FOR the wrong which he hath done: and there is no respect of persons." Col. 3:25.

American Tire and Tube Production—1922 and 1923

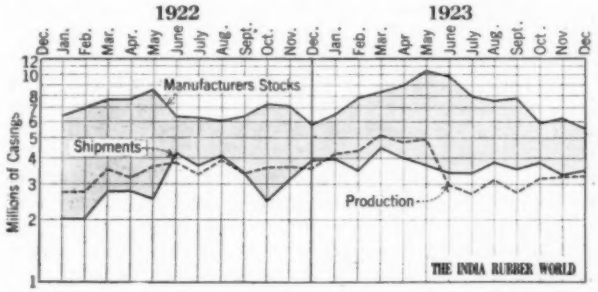
Ratio Graphs of Production, Shipments and Manufacturers' Stocks

The accompanying charts show the conditions that characterized the American tire manufacturing industry during 1922 and 1923 as related to supply and demand for pneumatic casings, inner tubes and solid tires. The data from which the curves were plotted were derived by amending the statistical reports compiled by the Rubber Association of America, which are rated as 75 per cent correct. Thus amended these statistics are tabulated below.

A separate ratio chart is shown for pneumatic casings, inner tubes and solid tires, each covering the same two-year period, 1922 and 1923. The shaded area of the charts shows the current stocks in manufacturers' hands month by month; that is, the balance on hand at the close of a given month, obtained by adding to the inventory the production for the month and deducting the shipments for the month.

Pneumatic Casings

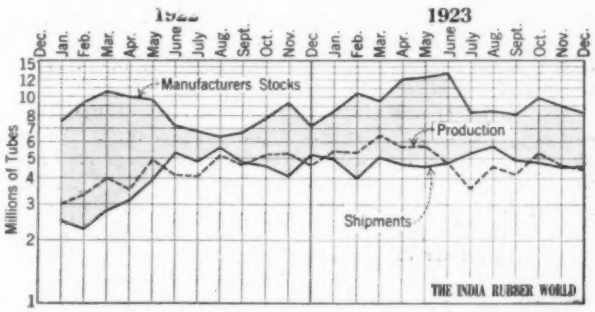
Reviewing the tire casings situation, it will be noted that in January, 1922, manufacturers' stocks were nearly 6½ millions and increased gradually to 8,500,000 May 1, at the peak of the



Production and Shipments of Pneumatic Casings. Shaded Portion Represents Stocks in Manufacturers' Hands

year, declining rapidly to 6,000,000 August 1, the low of the year, from which level there was a moderate rise covering two months culminating October 1 in a stock of about 7,250,000. This increase of 1,250,000 nearly sufficed after the fall shipments to close the year at approximately the stock level at which the year began.

In 1923 the May peak was nearly 10,500,000 or 2,000,000 over that of the previous May. Manufacturers' stocks remained high for several succeeding months, resulting in a precipitous drop in pro-



Production and Shipments of Inner Tubes. Shaded Portion Represents Stocks in Manufacturers' Hands

duction to around the 3,000,000 level for the remainder of the year. The slow movement of stocks was thus helped, further aided by shipments running well above production so that the year closed with stocks reduced nearly ¼ million below those of the previous January.

Production in 1922 was very well maintained between the 3 and 4 million per month levels, closing the year stronger than in 1923. In the latter year production went forward with a bound in the first five months and suddenly slumped from 5,000,000 to 3,000,000 or less for the remainder of the year.

From August to October, 1922, shipments fell off severely but regained the mid-summer level in December. Throughout 1923, however, shipments were better maintained and at higher levels than in the previous year.

Inner Tubes

Inspection of the graph of stocks, production and shipments will show, as might be anticipated, that these factors bear a striking resemblance in both pneumatic casings and inner tubes.

The liberal stocks of tubes early in 1922 reached the peak of the year in March, then underwent rapid depletion with the strong

Manufacturers' Stocks, Production and Domestic Shipments of Pneumatic Casings, Inner Tubes and Solid Tires

	Pneumatic Casings			Inner Tubes			Solid Tires		
	Stocks	Production	Shipments	Stocks	Production	Shipments	Stocks	Production	Shipments
1922									
January	6,177,105	2,740,179	2,129,074	7,603,754	3,124,524	2,516,299	151,578	53,632	44,392
February	6,951,029	2,779,077	2,083,153	9,381,528	3,462,365	2,270,111	248,213	52,689	49,073
March	7,673,484	3,527,720	2,765,284	10,567,390	4,023,348	2,787,649	244,371	65,911	64,469
April	7,705,163	3,201,583	2,782,201	10,068,434	3,534,097	3,105,791	224,138	62,219	69,745
May	8,473,767	3,628,671	2,519,031	9,628,401	3,960,928	3,918,596	223,777	76,853	80,948
June	6,329,336	3,785,153	4,177,680	7,124,648	4,174,172	5,298,238	231,985	88,118	84,544
July	6,134,195	3,302,181	3,593,460	6,817,725	4,090,932	4,840,992	253,273	98,673	80,567
August	6,006,371	3,873,612	4,039,764	6,393,863	5,027,632	5,626,746	272,768	112,417	92,580
September	6,152,901	3,339,659	3,336,141	6,809,635	4,668,589	4,745,295	287,981	110,356	89,063
October	7,359,467	3,566,216	2,451,693	7,840,147	5,083,677	4,560,907	304,196	113,973	95,033
November	7,091,203	3,644,179	3,172,944	9,311,251	5,131,211	4,100,031	345,224	114,267	81,955
December	5,762,761	3,542,589	3,912,105	7,122,989	4,581,432	5,101,256	345,950	106,295	86,093
1923									
January	6,438,585	4,169,693	3,992,396	8,055,392	5,269,180	4,998,201	380,258	111,124	80,815
February	7,804,980	4,290,649	3,451,519	10,412,617	5,385,603	4,902,263	376,339	100,609	84,525
March	8,271,583	5,140,968	4,430,183	9,717,389	6,500,549	5,104,420	354,646	106,384	106,192
April	8,868,584	4,719,101	3,994,880	12,157,486	5,679,411	4,714,170	345,987	95,291	96,812
May	10,410,421	4,879,981	3,677,019	12,594,254	5,756,476	4,552,153	367,953	103,051	89,529
June	9,893,811	3,942,590	3,336,247	12,907,669	4,783,315	4,774,747	404,989	96,593	69,501
July	7,899,551	2,667,318	3,385,867	8,335,157	3,555,105	5,256,323	348,023	56,460	60,292
August	7,475,693	3,107,887	3,743,243	8,295,988	4,770,563	5,738,712	353,338	64,158	61,233
September	7,737,817	2,706,108	3,498,367	8,057,908	4,339,433	4,911,432	320,642	49,432	61,295
October	5,838,145	3,148,453	3,759,444	9,877,242	5,140,325	4,794,316	298,836	49,713	64,087
November	6,177,344	3,199,633	3,275,061	8,963,969	4,602,354	4,563,237	261,389	43,436	66,961
December	5,517,441	3,249,864	3,471,489	8,146,186	4,384,887	4,663,296	210,826	56,586	83,211

advance of shipments, falling to a narrow margin during the three months of summer and regaining a moderate fall peak in November, shrinking nearly to the summer proportion at the close of the year. Production led shipments for the first five months and averaged with them for the remainder of the year. At the close of the year tube production was progressing at 50 per cent above the rate at the opening of the year and shipments at 100 per cent advance over their rate 12 months earlier.

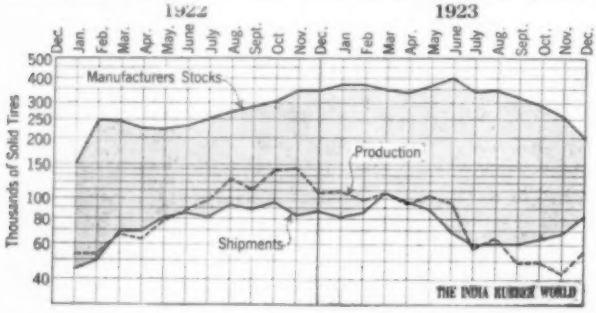
In 1923 the spring peak of stocks was advanced to June, being maintained by heavy production which reached its peak by March, thence falling off steadily to mid-summer and regaining slightly in volume to the year's end. The summer period of low supply in 1923 was of shorter duration than in the previous year, with margin double as great. The fall peak of supply occurred a month earlier and was of the same breadth.

The year closed with essentially double the stock of tubes available as compared to that on hand 12 months previously. Production and shipments held a more even course through 1923 than through 1922, closing the year not far below their positions January 1.

Tire and tube production statistics for 1924 should include separate figures for balloon tires and tubes.

Solid Tires

The graphs of stocks, production and shipments for solid tires during 1922-23 show practically no seasonal periods. All of 1922 and the first half of 1923 stocks gained in volume over shipments,



Production and Shipments of Solid Tires. Shaded Portion Represents Stocks in Manufacturers' Hands

then declined gradually to average proportions by December of that year.

For the two years shown stocks were roughly maintained at double the demand of shipments. Production and shipments practically coincided in amount for the first six months of 1922. For seven months thereafter shipments advanced but little while production rose to the peak of the year in October and November, 1922, before the long period of decline extending to the end of 1923. This decline of production met the peak shipments of the two-year period in March, 1923. The rise and fall in production thus embraced two full years, with the peak at the middle of the period.

Shipments took a generally parallel course but were notably below that of production for four months before and after peak production was reached. Peak shipments for 1922 and 1923 occurred March 1, 1923, then swinging downward during the summer and tending upward for the remainder of the year.

A MUSICAL REVIEW DESPAIRS OF THE BAGPIPE EVER BEING USED IN an orchestra while it has a leather bladder. Why not make the bladder of rubber? It surely would hold the air (atmospheric) as well as one of leather and could be just as nicely hooked up to chanter, drone, and mouthpiece. Another new use for rubber! But the big job is in first getting the "bonnie braw Hielanders" to brush up on the beauties of modern melody.

Catalpo—A Deflocculated Clay

Clay is derived from granitic rock formations by weathering or disintegration of feldspar. The clay material is thus intermingled with crystalline particles of quartz, mica, hornblende, magnetite, pyrites, etc. For all purposes these crystalline particles are harmful in clay. Crude clay, however, does not consist of separate particles of clay and impurities but occluded within the weathered clay particles are minute crystalline particles of the undecomposed rock. Washing clay removes some of the larger of these fragments but does not remove the occluded sharp-edged particles mentioned.

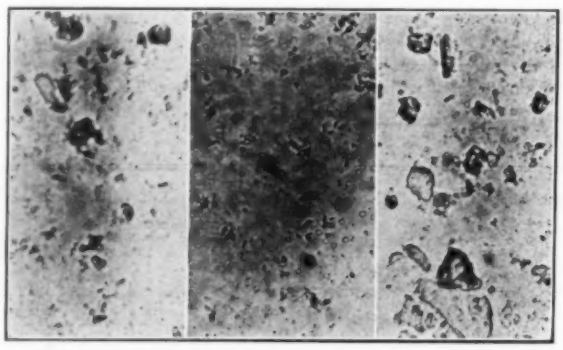
After several years' experimentation the English chemist, W. Feldenheimer, developed methods of treating clay by deflocculation which have been patented in England, France, Canada, Germany, and the United States. The product, designated by the term "Catalpo," has found great favor with foreign rubber manufacturers as a compounding material of special value.

The importance of the American rubber industry as a potential user of clay led the inventors to examine American clays with the view of locating the best supply for domestic manufacture. Such a source has been secured at Claymont, Georgia. This clay even before treatment is said to be superior to the English basic material and is initially more cellular in its micro structure than the English variety.

The conversion process consists in deflocculation of the clay, releasing the occluded gritty material, which is then removed from the colloidal suspension. The deflocculated, purified clay is dried, ground, and air floated, leaving a clay of extreme fineness and said to improve the abrasive properties of rubber.

The physical properties of clay after it has been broken down by a chemical agent to a colloidal state and dried are quite different from those of undeflocculated clay, however finely ground. The action of the deflocculating agent is to break down or divide the hydrated silicates into particles of the order of 70 millimicrons in diameter. When dried, these particles merely agglutinate somewhat, but upon mixing into a plastic or liquid they separate again into an exceedingly fine dispersion in the resultant material, ideal in rubber compounding.

Comparison of Catalpo with zinc oxide, carbon black and commercial rubber compounding clays, on equal volume percentage



A Commercial Clay (x700) **Catalpo** **Residue from Catalpo (x700)**

basis, in test formulæ show tensile properties strongly in favor of those stocks containing deflocculated clay.

GUAYULE RUBBER IN ITS WASHED AND DRIED FORM, ALL READY FOR compounding, is again being imported from Mexico by the Continental-Mexican Rubber Co., at present the sole producer. The addition of small quantities of guayule to a rubber compound is said to increase the uniformity of the product.

Overhead Carriers, Hoists and Conveyors in the Rubber Factory

Mechanical Aids in Tire Shops—Mill Room Conveyors and Hoists—Gravity and Motor Driven Carriers—Devices for Handling Rubber Materials and Products

ONE of the features of modern production methods as applied to rubber goods manufacturing has been the adoption of mechanical aids to facilitate the handling of materials, speed up production, and replace manpower. These changes have been accomplished with no opposition from labor because when performed manually they proved too burdensome physically.

All branches of the rubber industry use various forms of carriers, hoists, and conveyors, some made expressly for the purpose for which they are used, others adapted to uses through their application in other industries.

This article will briefly survey some of the more common types of devices under the classifications of overhead carriers, hoists, and conveyors used in such branches of rubber manufacturing as tires, footwear, heels, mechanicals, reclaiming, and fabric mills.

Conveyors and Hoists in Tire Shops

Owing to the weight and bulk of tire molds, it became imperative when the tire industry was in its infancy for the manufacturers to find some method of handling them economically and speedily. From the tire building department the finished unvulcanized tires are conveyed to the curing room by means of overhead trolleys. There the cores are removed, the airbag inserted, and the tire placed in the mold. The vulcanizers are flanked by roller conveyors on which the molds are moved to the proper vulcanizer and slid into place with practically no physical exertion or lost motion. Chain hoists are used to remove the molds from the vulcanizers after curing and take off the top part of the mold. Referring to the accompanying illustrations, Figures 4 and 6 show how this equipment is used in the tire curing room.

Modern mill practice has also found that the overhead trolley conveyor is indispensable in the calender room, especially in the tire plant. Under the old method, rolls of frictioned fabric were handled at the calender on one-man express trucks, small floor platforms, and it required three or four men to lift a roll from the machine and reinsert it for another coat. This not only involved loss of time but put a great physical strain upon the men, with resultant cases of hernia and rupture. By equipping each calender with a small overhead trolley unit and chain and fall device, one man can easily change the rolls, and the danger of the stock sticking to the liner through pressure against trucks and the floor is avoided. In some tire plants these trolleys are extended from the calender direct to the bias cutter and storage racks so that no rehandling of the roll is necessary. These trolley systems are usually equipped with an overhead scale for weighing, such as is shown in Figure 1.

Overhead Trolleys and Lifts in Mill Rooms

The same kind of equipment is also used in footwear, druggists' sundries and mechanical rubber mill rooms, where embossing rolls are frequently changed to care for various sizes and trademarks of uppers, outsoles, water bottles, etc. The usual procedure is to have this trolley extended so that the rolls can be not only removed from the calender to the storage racks but also taken to the machine shop for recutting and repairing.

The cutting department of the modern footwear factory is usually equipped with racks for the horizontal storage of rolls. This must be used in conjunction with an overhead trolley system of conveying the rolls from the calender department to the racks and a chain hoist to raise and lower them from the racks into the doubling drum wind-up. This doubling drum is a well-known device for plying up frictioned or coated stock to the thickness desired for cutting, from which the stock is cut off and rolled off on the cutter's table preparatory to being cut up by dinking or clicking machine. Some factories run the drum on a track to the various machines, others use a self-lifting truck, while in some cases the overhead trolley track is employed.

Gravity and Motor Driven Conveyors

Roller bearing conveyors for keeping raw materials, work in process, and finished goods supplied at the proper rate, are of two types, gravity and motor-driven.

Gravity conveyors, shown in Figures 7, 8, 9, 10 and 11, come in small sections and can be adapted readily for various uses without much expense, and are easily changed. In rubber plants they will be found used in unloading freight cars, in the compound and mixing room for conveying pans of compound from bin to bin, in the packing and shipping room for moving cases and boxes from operation to operation.

In the making department of the footwear factory they are used to carry lasts and partly finished shoes from lasting machines to finishers, with great savings in time and labor. In the cutting department they can be used to carry the cut parts from the machines to the putting-up tables. The tube plant can use many of these small units in packing and casing out finished tubes.

Motor-driven conveyors are used on bulky and heavy work where the flow of material is continuous enough to warrant it. There are countless types of this class of conveyor, many of which were manufactured specially for the uses to which they are put.

Figure 2 shows a motor-driven box conveyor with wood slats to keep the boxes from sliding back. This type of conveyor has been used in footwear factories for carrying books of outsoles and uppers from the cutting department to the making. It had the advantage of cutting down the handling time so that the number of days in routing the material through the plant could be reduced by its use.

Conveyors for Fabrics and Other Materials

Figure 5 shows a double-boom bag piler which can be used in the storerooms of large rubber plants for storing economically bags of whiting, zinc, lithopone, and various compounding ingredients. Figure 12 shows a bale conveyor for handling bales of cotton cloth, which are used by all classes of the rubber trade. Figures 13 and 13A show an elevator for automobile tire rims which are picked up by the ascending spool and delivered to the unloading platform. Each plant has its own conveying problems which are contingent upon plant layout, and devices are worked out to meet them in individual cases.

For example, a good plant layout calls for the cloth or fabric room to be located adjacent to the calender department. This is not always possible, owing to various conditions. The disadvantages of having it located a great distance from the calenders are that the rolls cool off after drying in transit, and there is difficulty in keeping the machines fed to maximum production without waits for material. With a roll elevator such as the one shown in Figures 14 and 14A, this difficulty would be over-

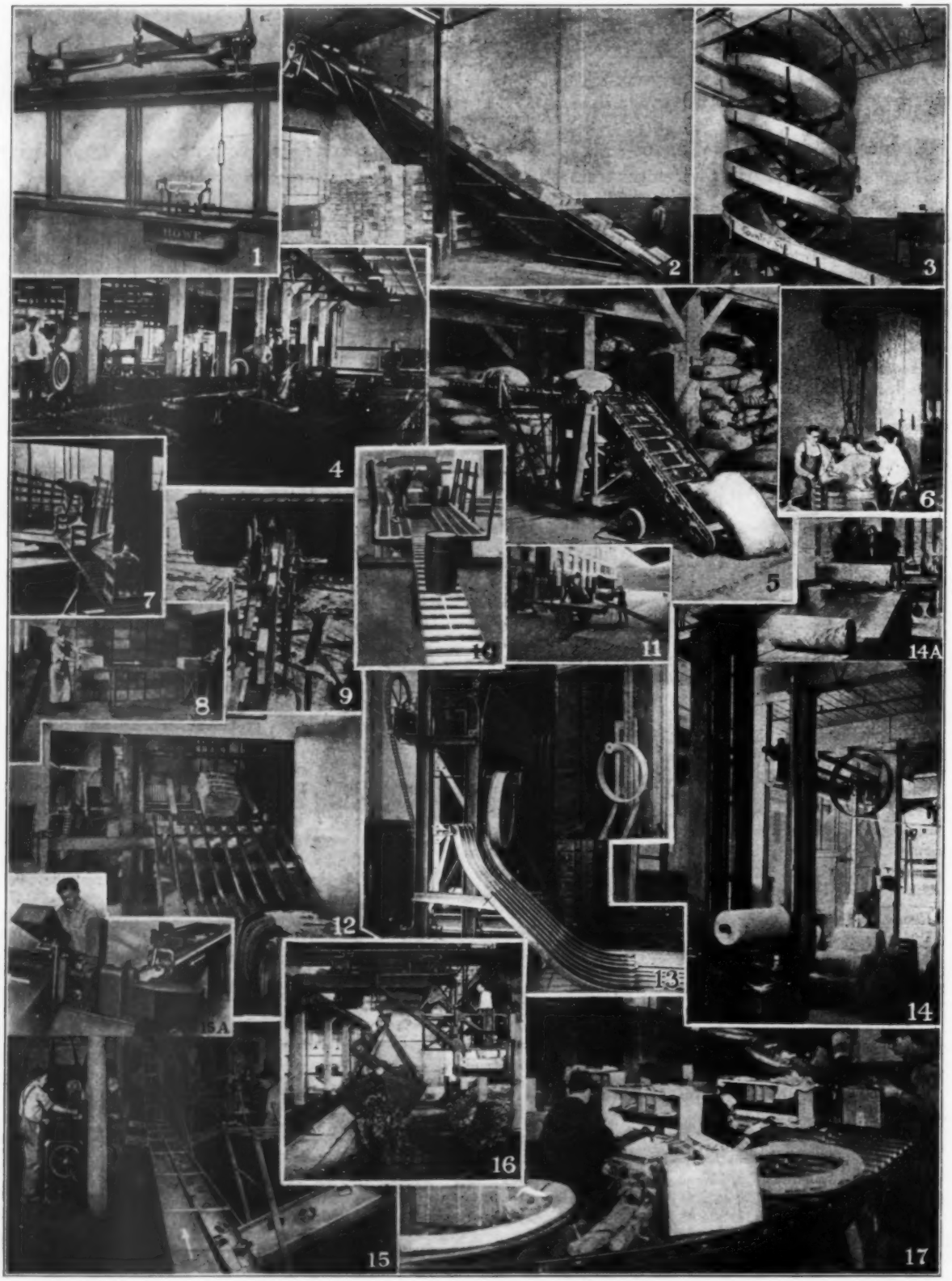


Fig. 1, Richards-Wilcox Mfg. Co. Figs. 2, 5, 7, 8, 9, 10, 11, 12, 13, 13A, 14, 14A, Link-Belt Co. Fig. 3, Haslett Spiral Chute Co. Figs. 15, 15A, Lamson Co. Fig. 16, Pawling & Harnischfeger Co.

Mechanical Devices That Facilitate Handling Rubber Materials and Products

come, and the fabric could be delivered from five or six floors above with no trouble or inconvenience.

Mechanical Aids in Packing and Shipping Rooms

Problems in the shipping department are often lost sight of because there are no apparently difficult processes to be worked out. But many rubber manufacturers have found out that profits made in the manufacturing of their goods have been eaten up by wasteful and inefficient methods of handling them from factory to consumer.

Figure 17 illustrates the use of gravity conveyors in the shipping room. Another case of the special machine for a special purpose is shown in Figures 15 and 15A, where the box machines deliver the finished product to a conveyor which carries them to the storage and packing room upstairs, doing away with the waiting and trucking. The spiral chute shown in Figure 3 can be used to advantage in the shipping room for quick delivery of goods to the shipping platform. A canvas rubber footwear factory can also use this device for delivering stitched uppers from the stitching department to the making department without rehandling or any lost motion.

Handling Coal and Ashes

The factory coal pile is another neglected spot where many thousands of dollars have been spent for manual labor where machines could do the job so much quicker and better. The average factory unloads coal from the rail siding into bins and then carts it by wheelbarrow to the boilers and removes the ashes in the same way. There are many devices on the market for handling coal and ashes economically. One of the latest is a crawler tread portable loader that is really a small steam shovel.

Conveying Equipment in Reclaiming Plants

The reclaiming plant is one of the largest users of automatic conveying equipment of all types. Overhead cranes, often motor driven, are used in the warehouse to pile and handle bales of scrap. Traveling belts and conveyors are used to carry scrap into hoppers of cutting and grinding machines from which the cut material is conveyed mechanically into grinding mills without rehandling or the use of manpower. In fact, the modern reclaiming plant is a revelation in mechanical conveying, and many other branches of the rubber industry might well adopt some of the methods of their mixing, grinding, and milling departments. Figure 16 shows a warehouse of a reclaiming plant, where a 3-ton grab bucket hoist is handling ground scrap mechanically.

The installation of mechanical conveying equipment calls for a great deal of study and planning because in the final analysis mere added convenience is not enough to justify the expense. A saving of manpower must be shown, and oftentimes this is not accomplished, not through the fault of the equipment, but through mishandling or ill arranging it.

LARGER AND LIGHTER GOLF BALLS PLANNED

Tests of golf balls have been recently made by the United States Golf Association, and a statement has been issued that balls of a lighter and larger type will be in use within the next two years or possibly eighteen months. With the advent of the new ball golf courses also must be lengthened. The present standard 1.62-1.62 golf ball as replaced by one of 1.55 ounces in weight and 1.666 inches in diameter will mean one that is easier to control on the greens, and which will also be of greater durability than the present far-flying variety.

DURING THE YEAR 1923 THE PHILIPPINE ISLANDS IMPORTED from the United States 727,589 pairs of canvas rubber-soled shoes, valued at $540,710. This represents a considerable advance over 1922, when the total was estimated at 590,207 pairs, valued at $462,501.

Gas Main Bags and Service Plugs[1]

Making connections and repairing breaks in gas mains necessitates the use of some readily applied device to temporarily shut off the gas supply during the progress of the work. Rubber bags and plugs are commonly used and formerly were the main reliance for this purpose. They are still so used in large numbers and also to supplement some expanded stoppering device which is wedged in the pipe mechanically.

The simplest form of gas bag is made of pure tough rubber stock in oval shape after the style of a football bladder and provided with a tube for inflation. This style gas bag is made in both light and heavy construction, and is pliable and easily inflated. When used in dry, clean mains it has been known to last for the whole season. Lightweight bags vary in size from 2 to 12 inches in diameter in order to cover a range of pipe sizes without undue inflation. Heavier bags run from 3 to 20 inches diameter.

For use in mains coated with tar or oil, canvas-covered bags are favored, the better to withstand these rubber deteriorating materials. The canvas cover is not united to the rubber bag surface, but the latter is a loose lining within the canvas, while the canvas cover itself is simply fitted to the tube and neck of the rubber bag. In this way the inflating pressure is passed on to the canvas, the rubber lining serving only as the sealing means. A bag of this construction permits inflation to a high pressure without damage.

Rubber Plugs, Gas Bag and Inflating Bulb for Gas Main Repairing

For gas mains running in sizes from 4 to 10 inches in diameter, expanding and non-expanding rubber plugs are used mounted on long or short iron rods or stems to adapt them to special conditions of work. For example, the one-piece solid plug is made of soft pliable rubber with taper shape. It can be quickly applied to the bottom of the service tee into which it fits wedge-like.

The expansion plug will fit in the bottom of a service tee. It is quickly expanded by turning the wing nut which securely shuts off all gas so that work may be carried on rapidly without discomfort or danger to the workman.

Another form of mounting the expansion plug is designed for use in the hub ends of pipe from 3 to 10 inches in diameter. They are used to keep the pipe free from mud and water or stones or gravel that may enter during the progress of pipe laying. They cannot be accidentally knocked out of place.

[1]Information and illustrations supplied by Safety Gas Main Stopper Co., Brooklyn, N. Y.

EXPORTS DURING 1922 OF AMERICAN TIRE REPAIR MATERIAL WERE estimated at 772,170 pounds, and valued at $310,034. For 1923 the figures rose to 831,371 pounds, valued at $358,902.

Tire Factory Manufacturing Costs—I

Continuous Process System—Purchases and Materials—Purchase Register and Material Ledger

By Joseph J. Dawson

THE purpose of this article is to endeavor to improve the methods of cost calculation at present in use in the majority of organizations of the tire industry. The particular type of system which the writer feels is most adaptable to this phase of the rubber business is the continuous process type. However, in factories where the production is great enough for one department to produce a particular size and type or where the output can be planned periodically, a production order can be advantageously used. The writer does not endorse the continuous process system in preference to all others, but will endeavor to show why it is most suitable and by a thorough explanation to throw greater light on tire costing work in general.

Continuous Process System

The continuous process system is practically constant in its cost of operation, that is, it lends itself readily to the handling of additional production without a corresponding increase in the accounting staff. The costs, as shown by such a system, are not distorted or misleading when only one or two sizes of tires are produced, as is the case with other types of systems. The amount of clerical work required of the operating departments is reduced to a minimum and factory statements can be quickly compiled at the end of the accounting period.

This work will be subdivided under the following headings and each section explained in detail with suggested forms most suitable for the work:

1. Purchases and Material Accounts.
2. Payroll and Payroll Analysis.
3. Production Reports.
4. Chart of Accounts.
5. Overhead Distribution and Production Centers.
6. The Factory Exhibits.
7. Analysis of Sales and Distribution of
   - (a) Administrative
   - (b) Selling
   - (c) Advertising
   - (d) Corporate

   } Overheads.
8. Postings to and "Tying-in" with the General Ledger.

Purchases and Material Accounts

Inasmuch as an organization functions as an endless chain, the cost system must function in the same manner, for the operating departments draw on the stores department for material to be used in manufacturing, and the stores authorize the purchasing department to supply them with the material to deliver to the factory. When the finished product is sold the returns therefrom supply the funds for the payment for the purchases, labor, and all expenses necessary to operation. The difference between the sales value of shipments and the total manufacturing cost of shipments (cost of sales) is the gross profit or loss, and the gross profit or loss less the administrative, selling, advertising and corporate overheads is the net profit or loss. Accordingly, the requisition for the purchase of needed material will be considered as the starting point in the cost routine.

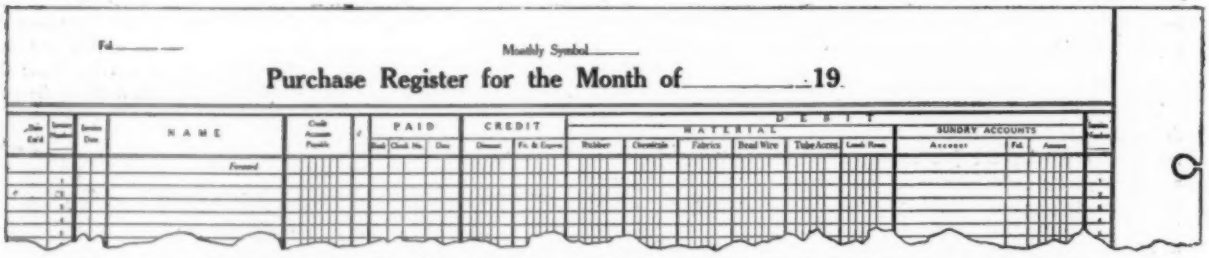
Control of stock should be centered in the planning and production department. When materials or supplies are needed to be purchased a purchase requisition should be issued in triplicate by a person or department provided with this authority according to the rules of the organization. It is usually customary for the following to have this authority:

1. Works Manager.
2. Storekeeper, when he finds stock is nearing a minimum. These requisitions should be submitted to the works manager or planning department for final approval.
3. Purchasing department, when according to the judgment of the purchasing agent stock reaches a point too low to complete orders on hand, or a pre-arranged production schedule, or when in his opinion market fluctuations will be such as to cause a considerable saving to the company by making advanced purchases.
4. Planning and Production Department. On the basis of production schedules authorized for which stock on hand is insufficient.
5. Plant Engineer. For all material necessary for repairs, maintenance, or new installations.

The planning and production department should receive all copies of purchase requisitions, regardless of point of origin, holding copy No. 3 as their permanent record. Copies No. 1 and No. 2 should be forwarded to the purchasing department, which in turn will hold copy No. 1 and return to the planning and production department copy No. 2, with notations thereon showing quantity ordered, date of order, purchase order number, terms and f.o.b. point. From this copy a record of orders placed, to show that additional material has been provided for, should be made on the stock records.

In order to give satisfactory results from a cost standpoint, as will be explained later, the purchase requisition should contain the following information and should not be honored by the purchasing department under any other conditions:

1. Date.
2. Quantity of material needed.
3. Description of material needed.
4. Department to which material is to be delivered.
5. Date needed.
6. Maximum and minimum stock authorized.
7. Stock on hand.
8. Stock reserved for orders.
9. Unfilled requisitions.


Fd.____ Monthly Symbol____

Purchase Register for the Month of_____19__

Date Paid	Invoice Number	Invoice Date	NAME	Code Account Payable	✓	PAID Bank	PAID Check No.	PAID Date	CREDIT Amount	CREDIT Fr. & Express	DEBIT MATERIAL Rubber	Chemicals	Fabrics	Bead Wire	Tube Accessories	Leak Tests	SUNDRY ACCOUNTS Account	SUNDRY ACCOUNTS Fd.	SUNDRY ACCOUNTS Amount	Voucher Number
			Forward																	

Verso Page of Purchase Register for Recording Accounts Payable and Distribution of Charges to Material Ledger

10. Department against which material is to be charged.
11. In the case of parts or new material, a sample or sketch.

As soon as the requisition containing all of the above information is received by the purchasing department a purchase order is issued, one copy of which should be forwarded to the receiving department for use in checking and delivering material to its proper destination when received. If the purchase requisition contained all of the information as previously outlined, the receiving department's work is relatively easy, inasmuch as the same information is contained in the purchase order.

Receiving

The first duty of the receiving department of any factory is to determine whether or not it has authority to receive, for the company, materials delivered to it. This is done by referring to the copy of the purchase order. Having determined that the material has been duly ordered for delivery, the receiving department will then make an actual physical count of the material for which this department is responsible until delivery has been made to the department or destination specified on the purchase order.

An individual receiving advice should be made out in triplicate for each shipment received, showing the following information:

1. Purchase Order number.
2. Date received.
3. Supplies from whom material is received.
4. How received.
5. Car number.
6. Incoming charges paid, if any.
7. Quantity of material received.
8. Description of material.
9. Should any discrepancies exist between the amounts specified on the order or the quantity claimed to have been delivered by the supplier, net and gross weights and quantities as found must be shown and any other information that would aid the service department in adjusting a claim.

All copies of the receiving advice should be signed by the receiving clerk and routed as follows:

Original—To the accounting department.

Duplicate—with the material to its destination and, after verification, forwarded to the planning department for posting to the stock records.

Triplicate—To the service department for verifying deliveries.

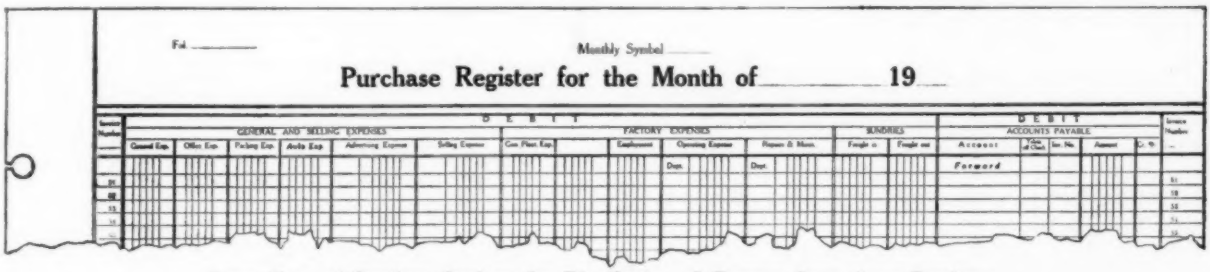
It is well for the receiving department to maintain a receiving log showing all receivals made daily, but as this is not necessary to the cost and accounting details, its use may therefore be optional.

The Purchase Register and Passing of Invoices for Payment

Suppliers should be requested to present invoices in duplicate. When invoices are received they should be sent to the purchasing department, which should be responsible for the verification of the price, terms, f.o.b. point, and for billing material as specified on the purchase order. The purchasing department should further be responsible for seeing that the department or work to which the material is to be charged is shown on both copies of the invoice. The foregoing constitutes the purchase department's duties in relation to invoices and good business demands that all further checking should be under the supervision of the accounting department.

When invoices are received in the accounting department they should be checked against the original copy of the receiving advice, attaching it to the invoice and noting on the invoice the date of receipt of the material, the receiving advice number and by whom the invoice was checked. All extensions shown on the invoice must be verified and the invoice initialed by the person making the verification. As soon as this work is completed the account to which the material is to be charged should be marked on the invoices by a responsible member of the accounting department and the invoices entered on the purchase register and each invoice should be given a purchase register number.

The purchase register should show the date the invoice is entered, the date of the invoice, the invoice number, the suppliers' name and the total amount of the invoice, which should be entered in the accounts payable column and distributed to the inventory or expense accounts as authorized by the accounting department. The purchase register should be closed and balanced at the end of the accounting period and the total of the accounts payable column posted to the accounts payable control in the general ledger as a credit. The totals of the various inventory and expense account columns should be posted as debits to their respective controls.


Fol. _____ Monthly Symbol _____

Purchase Register for the Month of _____ 19__

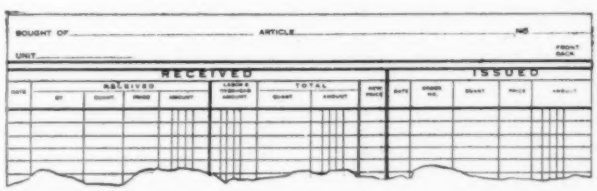
DEBIT — GENERAL AND SELLING EXPENSES: General Exp. | Office Exp. | Packing Exp. | Auto Exp. | Advertising Expense | Selling Expense
DEBIT — FACTORY EXPENSES: Gen. Plant Exp. | Employment | Operating Expense (Dept.) | Repairs & Maint. (Dept.)
DEBIT — SUNDRIES: Freight in | Freight out
DEBIT — ACCOUNTS PAYABLE: Account | Gen. Ledger Ac't Check | Inv. No. | Amount | L. F.
Forward

Recto Page of Purchase Register for Distribution of Expense Items from Purchases

The duplicate copies of all invoices chargeable to inventory accounts should be forwarded to the material ledger department as soon as the originals are passed to the accounts payable department. The invoices are the posting media for all debits to the detail inventory accounts, and at the end of each accounting period these detail accounts must be checked with their respective controls as shown by the general ledger.

The Material Ledger—Inventory Accounts

The material ledger or detail of the inventory accounts should be under the supervision of the cost department, and its trial balance, "tied-in" with the balance of the control accounts, as shown by the general books, at the end of each accounting period.


BOUGHT OF _____ ARTICLE _____ NO. _____
UNIT _____ FRONT BACK
RECEIVED: Date | By | Received: Quantity, Price, Amount | Labor & Overhead Amount | Total: Quantity, Amount | New Price
ISSUED: Date | Order No. | Quantity | Price | Amount

Ledger for Materials and Materials in Process Accounts

If mechanical bookkeeping machines are used for detail ledger accounts, the stock record may be successfully combined with the material ledger, inasmuch as postings and new balances can be shown daily. If bookkeeping machines are not in use, credit postings should be made at the end of each accounting period, from summaries compiled from production reports which will

be explained in detail later. All debit postings should be made as soon as invoices are passed to the accounts payable department and the total postings for the accounting period verified with the control figures as shown by the purchase register.

The material ledger should show date of invoice or posting, authority for posting (invoice number), quantity received, unit price, total amount of invoice. Before any credit entries are made the average price at which material is to be withdrawn should be calculated and this price used for determining credit postings.

It will be noted that the suggested material ledger form shown can be used for a processed material ledger also inasmuch as a labor and overhead column is provided to allow for these entries to be made before determining the total debit balance for calculating the net average price.

The next article in this series will be "Payroll and Payroll Analysis."

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

(356) We are asked for address of a concern manufacturing machinery for making tire flaps and blowout patches.

(357) A list of manufacturers of auto top material is requested.

(358) A reader seeks information concerning the users and purchasers of formaldehyde aniline.

(359) We are asked for names of firms supplying wire wheels used to smooth up tires.

(360) Request is made for address of manufacturer of rubber sheeting.

(361) From London, England, comes a request for a list of manufacturers of automatic presses for making the ebonite jars used in accumulator work.

(362) We are asked where diphenyldiamino-carbazole may be obtained.

(363) A subscriber asks for a list of firms making tubing of thin sheet rubber 7/8 inch in diameter.

(364) Correspondent wishes to get in touch with firms who can supply equipment for and information concerning waste rubber reclaiming.

(365) We are asked for a source of supply of naphtha used in dipped rubber goods.

(366) Information is desired as to where a winding machine for golf balls may be obtained in the United States.

(367) We are asked for names of golf ball mold manufacturers.

(368) A list of manufacturers of steel rims is requested.

(369) A subscriber desires to get in touch with manufacturers of asbestos cloth with brass wire insertion.

(370) We are asked for names of concerns that would make rubber heels from molds supplied by purchaser; lots 1,000 to 10,000 pairs.

(371) Address of source of supply of uncured rubber stock for making heels is requested.

(372) From South America comes the request for names of manufacturers of tire and tube machinery, machines capable of turning out 1,200 tires and tubes daily.

(373) A subscriber in South Africa desires to get in touch with American manufacturers of floor tiling of rubber or rubber composition.

(374) Inquiry is made for addresses of manufacturers of holland cloth.

(375) Address is requested of a manufacturer of bead trimmers.

(376) We are also asked for the address of a manufacturer of fabric pullers.

(377) We are asked for names of firms who might purchase scrap rubber in powder form.

(378) An inquirer in England wishes to get in touch with an American manufacturer of transparent or semi-transparent vulcanized sheet rubber, the thickness to be about that of an inflated balloon.

(379) From Switzerland comes a request for addresses of manufacturers of gray rubber aprons for general household use.

(380) A subscriber desires to get in touch with a manufacturer of a machine for making hose tubes from calendered stock, lapping the seam as is now done by hand in making calendered tubes for cotton rubber-lined hose.

Foreign Trade Opportunities

Addresses and information concerning the inquiries listed below will be supplied to our readers through the Foreign Trade Bureau of The India Rubber World, 25 West 45th street, New York, N. Y. Requests for each address should be on a separate sheet and state number.

Number	Country and Commodity	Purchase or Agency
9,340	England—Toy balloons	Agency
9,343	Venezuela—Mechanical rubber goods and tires	Purchase and agency
9,408	England—Balloons, airships and other rubber novelties	Purchase and agency
9,429	Poland—Automobile tires	Purchase and agency
9,436	Yugoslavia—Solid and pneumatic tires	Agency
9,455	Germany—Balls, bathing caps, bathing shoes; surgical, mechanical and hygienic goods; toys, sponges, nipples and football bladders	Exclusive agency
9,477	Portugal—Rubber goods, general lines	Agency
9,478	Spain—Scrap rubber	Purchase
9,598	Germany—Rubber heels, black, brown and red; also superior quality rubber shoes for men, women and children	Purchase
9,599	England—Toy balloons, 5,000 gross	Purchase
9,600	Sweden—Surgeons' gloves	Agency
9,617	China—Electrical accessories, such as rubber insulated wires, cables, flexible lampcords, etc.	Purchase

Trade Lists Available

Number	Country and Commodity	
BE—6037-A	South Africa—Rubber goods	Importers and dealers

FOREIGN RUBBER TRADE INFORMATION

A series of special circulars, containing brief items of interest regarding the rubber industry in various foreign countries, is now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C. As a rule each of these publications contains a number of items, although some are devoted to a more detailed account of the rubber industry in some one country. Those of the latter class mentioned below are marked with an asterisk.

Special Circular No. 401—"Rubber Hose Market in Argentina," etc., etc.

Special Circular No. 402—"Market for Rubber Footwear and Waterproofed Goods in Stavanger, Norway," etc., etc.

*Special Circular No. 407—"Retail Tire Prices in Belgium."

Special Circular No. 412—"Tire Market in Cienfuegos, Cuba," etc., etc.

Foreign Tariffs

The Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C., has recently issued the following special circulars regarding foreign customs tariffs:

Circular No.	Country	Articles
†383	Argentina	Rubber Goods
399	Germany	Rubber Goods
*400	Finland	Rubber Goods
414	Union of South Africa	Rubber Hose of American Origin, (Dumping Duty)
419	Argentina	Tires, tubes, etc.

*Canceling Special Circular No. 141.
†Canceling Special Circular No. 129.

Rubber Offset Printing Blankets[1]

Offset Lithography—Offset Blanket in Inking System of Press—Offset Blanket Making Demands Skill and Accuracy

LITHOGRAPHY is a system of printing by offsetting or transferring the design from a specially prepared stone or metal surface. Those areas which are to print are made absorptive to ink and repellant to water, and those not to print are made the reverse in order not to take ink. Stone lithography is expensive, slow and not adapted to the special field of colorgraphic printing occupied by offset lithography.

Offset Press

The offset process was developed for printing designs and advertising matter on sheet tin to be made into containers. Offset printing is done on a rotary press, of the type shown in Figure 1, in which zinc rolls lithographically prepared are used in place of flat lithographic stones. The offset means consists of a rubber blanket interposed between the metal plate roll and the material to be printed.

The offset blanket surface is lithographically prepared in manner corresponding to the etched zinc roll surface that bears the original design. The blanket as it contacts with the zinc roll receives the imprint and offsets or transfers it to the surface to be printed whether paper, metal or rubberized cloth.

Rotary offset presses will print from 1,500 to 5,000 copies an hour according to the character of the work, as compared to maximum of about 1,200 copies an hour by the flat-bed stone lithographic press. Good offset printing involves strict compliance with many exacting details, such as close mechanical accuracy in the press and blanket equipment, inks, paper, etc.

The vital importance of mechanical accuracy cannot be overemphasized. In no part of the equipment is greater accuracy as to quality, cure and exact uniformity of thickness essential than in the offset blanket. For this reason successful makers of offset blankets are very few. The same applies also to rubber inking

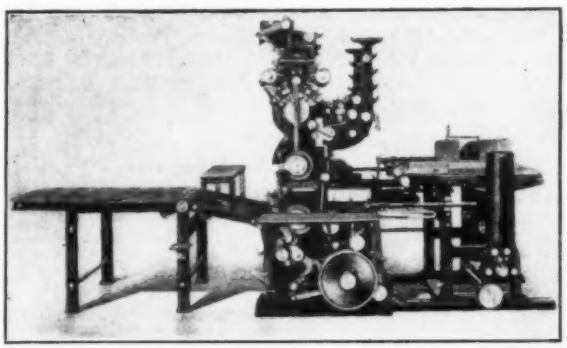


Fig. 1.—Rotary Offset Metal Decorating Press. Premium Potter.

rollers for lithographic work. Offset printing would be impossible without the rubber blanket. Its function is just as vital in its way as that of pneumatic tires on the automobile.

Offset Roller and Blanket Arrangement

The location of the offset blanket in the roller arrangement of an offset press is shown in Figure 2. Central in this arrangement is the zinc or lithographic plate roll, *A*, bearing the design to be printed. The plate roll is inked by contact with fine ink form rollers, *a*, which derive their ink or color supply from founts through the superimposed system of distributing rollers and cylinders *B*, *C*, *D*, *E* and *F*. Those portions of the plate roll *A* which are not to print are damped by contact with the absorbent textile covered rollers *G* to which water is fed by similar absorbent rollers, *H* and *J*, taking the supply from a water fount, *K*, at the side.

Immediately under and in contact with the plate roll *A* is the offset blanket cylinder *B*, upon which the rubber blanket is tightly stretched and clamped by means of steel bars fastened securely along its edges parallel to the axis of the cylinders.

The impression cylinder *C* is located below and at one side of the center of blanket cylinder in the case of paper printing, and directly under it in the case of a metal decorating press such as that represented in Figure 1.

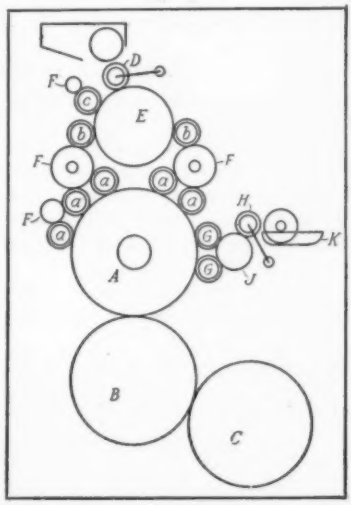


Fig. 2.—Roller Arrangement of Offset Press. Premium Potter.

Offset Blanket Making

Offset blankets are made on sheeting specially woven from Sea Island cotton to secure mechanical perfection in the fabric base. The slightest unevenness in weaving would render the goods worthless for blanket making since one of the most exacting requirements for offset blankets is uniformity of gage and freedom from all imperfection in face, body or back. Blankets are made in 25-yard lengths in widths up to 60 inches and up to 6 plies.

Only the highest quality of Pará rubber is suitable for blanket making and requires to be absolutely free from all particles of grit, bark, etc. The rubber mixing is designed to be as resistant as possible to the action of oil, acid, alkali and volatile ink solvents used for cleaning the blanket in service.

Every step in the preparation and use of the rubber mixing is safeguarded against the inclusion of grit in the stock. Thus every compounding ingredient requires sieving individually. As an additional precaution each batch of ingredients is passed through a bolting reel to remove any stray grit and thoroughly mix the materials as an aid to uniformity in the finally milled stock.

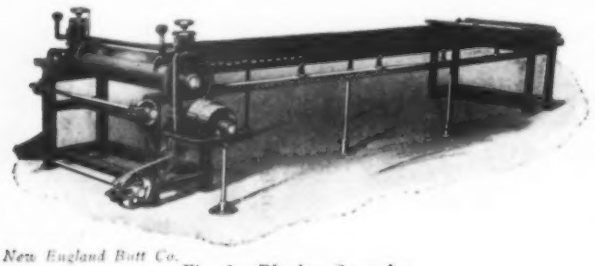
Rubber mixings for offset blankets are applied as cement coatings in an ordinary proofing spreader as the most practical way to secure the perfection of gage and construction desired. This means that the rubber stock must be thoroughly plasticized before solution in order to insure ease of solution and a cement which can be spread to gage without tendency to creep and with a glass-like finish.

No step in the process of offset blanket making can be done casually or without frequent inspection. Uniform thickness must be controlled within a tolerance of .002-inch. This can be done

[1] Data for this article furnished by The Vulcan Proofing Co., Brooklyn, N. Y.

by the rubber spreader of the type shown in Figure 3. A blanket of average thickness receives 250 spread coats; thus the output of a spreader on offset work is two blankets a week.

In an offset press the blanket is attached to its roll support under tension and must remain in place without stretching.



New England Butt Co.

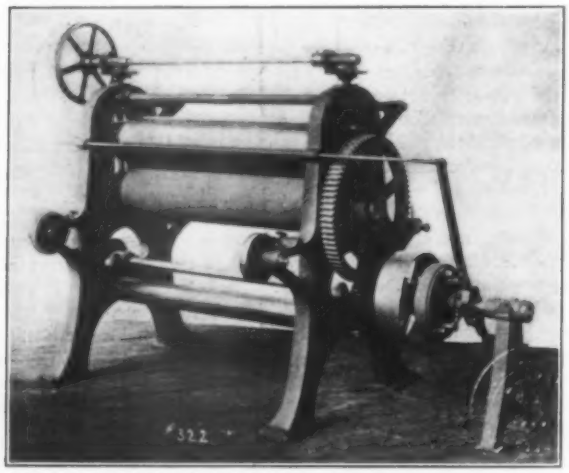
Fig. 3.—Blanket Spreader

Strength without stretch is secured by plying up the spread fabric under tension on a two-roll doubling calender of the type pictured in Figure 4.

Curing Offset Blankets

In preparation for curing, the face of an offset blanket is dusted with a coating of finest talc and rolled on a cushioned drum for curing in open steam. The cure is effected under conditions of time and temperature control. Domestic blankets are cured distinctly less hard than those of foreign manufacture. Hard and soft surface blankets have each their special adaptations to press work conditions of different types of colorgraphic work.

However carefully made, no offset blanket is mounted as received from the manufacturer without rigid inspection in the



Farrel Foundry & Machine Co.

Fig. 4.—Blanket Doubling Calender

blanket room of the offset press department. There the surface of the blanket is first washed free of talc and sulphur bloom to facilitate examination of the surface through a magnifying glass to detect the presence of pin holes, grit, or other imperfections in its surface. Next the blanket is calipered systematically with a screw micrometer having a span sufficient to reach to the center line of the blanket from either edge. A uniform variation in gage is allowed of .001 inch plus or minus.

Its surface and gage being satisfactory, the blanket is stretched and clamped upon the offset roller. Perfect offset impressions are dependent on exactness of pressure. This is regulated by adjustment of a sheet of underlay paper back of the blanket. For this purpose stock rolls are kept of firm paper which vary by single thousandths from one to ten thousandths of an inch.

Point of Service

In point of service more blankets are spoiled in washing than in any other manner. They should not be washed with kerosene but with gasoline which evaporates rapidly without leaving an oily residue to injure the rubber surface. After a blanket has been in use for a week it should be washed well with a very weak solution of caustic soda. This application thoroughly cleans the rubber and restores its freshness. The washed blanket may be dusted with mixed talc and sulphur and allowed to remain over night before removal from the roller.

If a blanket is properly vulcanized, taken care of, washed as it should be, and the offset impression not so heavy that it wears the surface, a blanket should run for a long time yielding several hundred thousand, often a million, impressions before being outworn. In special instances a million and a half impressions have been obtained from a certain make of domestic blanket.

JAPAN AS MARKET FOR AMERICAN TIRES

Corresponding to the recent development of United States exports to Japan of automotive vehicles is the increase in shipments of American rubber tires. Especial increases in sales occurred in the months immediately following the earthquake, and it is estimated that there are now in Japan approximately 11,000 passenger cars, 7,500 trucks, and 4,500 motor cycles. In order to completely equip every motor-vehicle wheel in Japan, about 85,000 tires would be needed, including tires for motorcycle side cars, but not allowing for spares. During 1923 the United States exported to Japan 52,493 automobile casings, 23,030 inner tubes, and 10,275 solid tires, or a total of over 63,000 outer tires and 23,000 tubes.

Caution, however, is necessary, or an oversupply of tires will occur, particularly as in the past the Yokohama Rubber Co. and the Dunlop factory at Kobe supplied fully 85 per cent of the Japanese trade. Although the first-mentioned of these two plants was destroyed by the earthquake, the latter, the dominating factor in the Japanese industry, was uninjured. While Japan transships some American-made goods, few of the tire markets which she supplies are important ones. The temporary reduction in import duties on automobile tires and the free admission of truck tires, by the decree which was issued following the earthquake and which expires on March 31, 1924, is believed to have been utilized already to the full extent warranted, considering the market requirements.—*Commerce Reports.*

TIRE AND RIM ASSOCIATION REPORT OF RIMS INSPECTED AND APPROVED DURING FEBRUARY, 1924.

Size	Number	Per Cent
26 x 3 MC	3,943	0.2
28 x 3 MC	5,007	0.2
30 x 3 Cl	42,327	1.9
27 x 3½ s. s.	289	0.0
28 x 3½ s. s.	75,910	3.3
30 x 3½ Cl	833,081	36.9
30 x 3½ s. s.	465,744	20.4
32 x 3½	12,002	0.5
28 x 4	58,870	2.6
29 x 4	43,480	1.5
30 x 4	550	0.0
31 x 4 Cl	216,217	9.4
31 x 4 s. s.	5,773	0.3
32 x 4	268,308	11.7
33 x 4	19,291	0.9
29 x 4½	40,493	1.8
30 x 4½	7,768	0.3
31 x 4½	624	0.0
32 x 4½	140,215	6.1
33 x 4½	990	0.0
34 x 4½	29,836	1.3
36 x 4½	165	0.0
30 x 5	4,409	0.2
34 x 5	7,362	0.3
32 x 6	960	0.0
36 x 6	2,732	0.1
38 x 7	1,990	0.1
Total	2,288,336	100.0

Rubber Molds for Plaster Casts[1]

Industrial Applications—Making Plaster Images—Building and Curing Rubber Molds—Mounting Molds for Casting—Plaster Mixture and Pouring

Industrial Applications

RUBBER molds are not new but have certain interesting industrial applications. Vulcanized rubber matrices or molds are less frequently used now than formerly in rubber factories, where they are regarded only as emergency equipment for shaping such goods as molded step treads and mats. Their chief advantages are cheapness and lightness. Even when handled with skill and judgment they are a short-lived and unsatisfactory substitute for a metal mold. Their use is restricted to limited special output which does not warrant the expense of a metal mold.

Vulcanized rubber molds as a product, however, are standard equipment in certain industrial lines such as special candy forms and statuettes, images, novelties, etc., cast in plaster of Paris or in any other readily flowing, cold, semi-liquid material which sets without pressure.

Fig. 1. Finished Ash Tray Image and Two Part Rubber Mold in Which It Was Cast

Making Plaster Images

Formerly, inexpensive novelties, images, or statuettes were cast by pouring liquid plaster of Paris into molds made of glue or printers' roll composition. Glue molds are cheap and flexible but unsatisfactory because not durable. The molds tear in service and necessitate frequent renewal by melting and recasting. The expense involved in mold renewal led to the development of soft-rubber molds as a substitute. Rubber molds for casting plaster novelties were introduced as factory equipment early in 1914.

Clay Model to Plaster Cast

The place of the rubber mold in plaster casting will be made clear by recounting the steps involved between the original figure modeled in clay and the completed cast plaster reproduction.

From the clay model a two-part plaster mold is made. In each half of the plaster mold a soft metal positive or matrix is cast. Each metal casting requires its own plaster mold as the latter is broken up in removing the metal casting because of the undercuts in the original.

Building and Curing the Rubber Mold

The rubber mold is built of pure sheet rubber about ⅛ inch or more in thickness, the stock being cut and plied as required to roughly fill the metal positive mold.

The cure of the mold is effected either in a steam platen press or in a steam vulcanizer. The latter method is preferable and more economical where a number of metal molds are available because time is saved and close control of the curing conditions is possible. The usual open heat cure is one hour at 45 pounds steam pressure.

A closed rubber mold is shown in Figure 1 for producing the image represented in the same illustration. Figure 2 shows the plaster shell used for enclosing a pair of rubber molds forming another image and also the shell open, exposing both sides of the rubber mold, one of which contains the cast image. The latter is readily removed by reversal of the flexible mold.

The rubber mold halves always match together or register all around their edges except at the bottom where the full base is left open for pouring the plaster. The walls of the rubber mold are about ¼ inch thick and will bend, stretch and reverse easily. High quality rubber is necessary to secure elasticity needed for removal of the mold from undercut places on the plaster cast and to secure durability under rough handling.

Fig. 2. Plaster Shell Ready for Casting and Opened Shell Showing Rubber Mold and Plaster Cast Image

Mounting Rubber Molds for Casting

The arrangement of a rubber mold for plaster casting consists in matching together the half molds and encasing them in a stout shell made of plaster in which is embedded strips of burlap to give strength to the shell. When complete and ready for the

[1] Information and illustrations supplied by Frank Dimi, 203 East 21st Street, New York, N. Y.

operation of casting, the shell containing the encased mold is held together against leakage of liquid by encircling it with an endless leather strap, between which and the shell a single wedge of wood is inserted by hand. The mold shell shown in Figure 2 is roughly shaped, with either end sliced off to afford support on the bottom for standing on the bench, and on the top to admit pouring the liquid plaster into the open mold in which the object is cast inverted.

Plaster Mixture and Casting

The pouring mixture is ordinary plaster of Paris mixed thin in a solution of boiled dextrine in water. The presence of the dextrine serves to strengthen and harden the plaster. After first filling the mold, the escape of air and consolidation of the material is effected by jolting the bottom of the shell on a burlap cushion, after which the mold is again filled to overflowing.

In 15 or 20 minutes after pouring, the cast can be removed. This is done by unwedging the encircling strap, when the halves of the shell fall apart and release the rubber mold from the cast, as shown in Figure 2.

Separation of rubber mold from the plaster cast is facilitated by lubrication of the mold surface with a very light brush coat of castor oil previous to each casting.

Rubber molds are sufficiently inexpensive to allow many duplicates to be made to facilitate production. When made of high grade stock they are perfect for the purpose and extremely durable, giving a number of years' constant service without damage or apparent wear.

Spring Meeting of Committee D-13

The spring meeting of Committee D-13 on textile materials, of the American Society for Testing Materials, was held at the U. S. Bureau of Standards, Washington, D. C., March 7 and 8, 1924.

The extension of the scope of this committee to include investigations in the woolen and worsted industry, knit goods, yarn, thread and twine has stimulated a notable increase of interest.

A. E. Jury, of the United States Rubber Co., chairman of the committee, emphasized the fact that it confined itself to specifications and test methods, and avoided all other phases of research work. There is such a limited amount of fundamental research work being done in this country, particularly in textiles, that he considered it to the advantage of the industry for all to cooperate to the fullest extent in the work of the committee.

In the development of specifications and test methods for worsted yarns, the sub-committee suggested the following points for consideration: Tolerance for count and twist; proper conditions for breaking strength; single strand test; atmospheric conditions for and during test, and speed at which the pulling jaw travels.

The special sub-committee on knit goods has agreed to consider for the present specifications and methods for testing nets and jerseys only of such types as are used in the rubber industry or by other companies where the materials may be considered for mechanical or engineering uses.

In the report of Sub-Committee VII on yarn, thread and twine the important change noted in the tentative specifications for cotton yarns was in connection with tolerances. After prolonged debate, a blanket tolerance of three per cent above and below for all sizes, carded or combed, was decided upon as a tentative specification. Discussion of percentage regain of cotton yarn brought out the point that seven per cent at 63 per cent relative humidity and 70 degrees F. is the actual regain in percentage according to tests carried on over a period of time and it was decided to retain this figure for yarns at least.

The final session of the meeting included an informal talk by Dr. G. K. Burgess, director of the Bureau of Standards and past president of the American Society for Testing Materials, who volunteered his full support in aid of developing textile standards. Then followed a conference between Committee D-13 and the Textile Committee of the Federal Specifications Board. As a result the Textile Committee will submit to Committee D-13 such specifications as might have a special bearing on the work of that committee.

The Use of Rubber in Paint[1]

It has been known for a long time that the addition of a certain proportion of rubber constitutes an important improvement in the manufacture of mixed paints. Handbooks on paint manufacture by scientists refer to this subject.

The effect of rubber on paint is threefold: (1) it improves the flow and appearance; (2) it increases elasticity; (3) it increases resistance against atmospheric and weather influences.

The beneficial addition of rubber to certain gum varnishes, particularly those that dry quickly and therefore must not contain a large percentage of oil, will be readily realized, because with the reduced percentage of oil these varnishes are apt to become brittle after drying. The rubber, however, not only gives such varnishes or paints manufactured with them increased elasticity but it also appears to combine to a remarkable degree with the various gums. This, of course, is explained by the fact that varnish gums and rubber are both derived from the same source; that is, they are a condensed sap of various trees. The difference between them, however, is that all the gums in their nature are hard and brittle, while rubber is extremely elastic and pliable. If such an improvement can be effected with varnish, it becomes the greater with a varnish paint, because the presence of pigment in the varnish paint increases the brittleness of the paint and reduces its resistance against atmospheric influences, but the addition even to a pure oil paint has been found by many manufacturers to be beneficial.

Hitherto rubber has been mostly dissolved in certain hydrocarbons which have a very limited capacity for dissolving rubber, and as a result such solutions were very weak in rubber. It has been found that by melting rubber together with a very moderate percentage of another material, it could be very readily mixed with hydrocarbons, thereby obtaining a highly saturated solution of rubber.

For some years experiments have been made with paints containing rubber in order to ascertain the exact proportion of rubber needed in a paint. For this purpose various paints were mixed with various percentages of rubber, starting with ½, 1, 2, 3, 4 and 5 per cent. The results of these tests show that a 1 per cent addition by weight to mixed paint gives the best results; that is, superior to the lesser percentage or to no rubber at all, as well as to the higher percentages. And by increasing the rubber content above 1 per cent the resistance against atmospheric influences again became gradually less and less. The statement by United States government scientists who have experimented in this field, that the addition of a small amount of rubber to anti-fouling paints gives the latter increased efficiency, was verified.

As a result, there has been perfected a concentrated rubber solution commercially known as "Cumaline" rubber solution. The addition, by measure, of 3 to 6 per cent of this material, or of ¼ to ½ pint to a gallon of mixed paint will give the best result from every point of view. The solution is very inexpensive. As a matter of fact, it does not add to the cost of mixed paint. In the paint trade each manufacturer usually relies on his own experience in the manufacture of his goods. However, those who have not experimented with rubber can easily ascertain for themselves whether this material possesses the marked advantages claimed for it.

[1] Data supplied by International Composition Co., 90 West street, New York, N. Y.

Rubber Parts in Radio Instruments

Wide Adaptability of Rubber in Radio—Superior Insulating Qualities—Review of Rubber Radio Parts Now in Use—Numerous New Devices and Attachments

From the beginning of wireless communication the remarkable chemical, mechanical and electrical properties and pleasing appearance of hard rubber for instrument parts have remained unsurpassed. The facility with which many other compounds can be molded in highly finished pieces, with or without metal inserts, led to their widespread use during the first boom of radio telephone broadcasting and reception. But radio instrument building is now stabilizing on quality, and in consequence more consideration is given to the dielectric characteristics and superior insulating qualities of hard rubber parts for the best sets, especially in radio-frequency work.

Wide Adaptability of Rubber in Radio

Moreover, rubber in its various forms, soft and hard, has such a wide range of adaptability that inventive genius is rapidly finding new applications for it in the radio art. Many instruments now in use are dependent upon it for their effectiveness, and scarcely a week passes without new offerings in this direction.

Superior Insulating Qualities

It is unnecessary to rehearse in detail the dielectric superiority and remarkable workability of specially compounded hard rubber panels and molded instrument parts, as that has already been presented in The India Rubber World[1]. Suffice it to say that its low phase angle difference, low dielectric constant, low moisture absorption and high resistivity are such as to have resulted in a rapid and steady increase in the use of all the well-known hard rubber telephone and telegraph instrument parts, and an ever broadening array of special radio instrument parts and supplementary attachments of soft and solid rubber.

Hard Rubber Radio Panels

The remarkable insulation qualities, workability and firm finish of the best hard rubber radio panels render them superior to any other material. They are non-porous, non-absorbent, warp resisting and permanent. They may be molded, machined, drilled, sawed, threaded, engraved, stamped, sanded and polished easily and accurately without danger of chipping. For these qualities they appeal irresistibly to the amateur engineer and manufacturer. Their highly polished, flawless surfaces are in themselves a guarantee against surface leakage between terminal posts.

Hard rubber radio panels may now be had in black and mahogany wood grain effects ¼ and 3/16-inch in thickness with edges ground square and smooth. The ¼-inch panels are stocked in 10 by 12 and 20 by 24 sizes, the 3/16-inch panels in nineteen stock sizes, ranging from 6 by 7 to 6 by 21; 7 by 9 to 7 by 48; 8 by 26; and 9 by 14 to 20 by 24. The 7 by 48 size is useful for cutting to special short lengths.

Tube Sockets and Socket Cushions

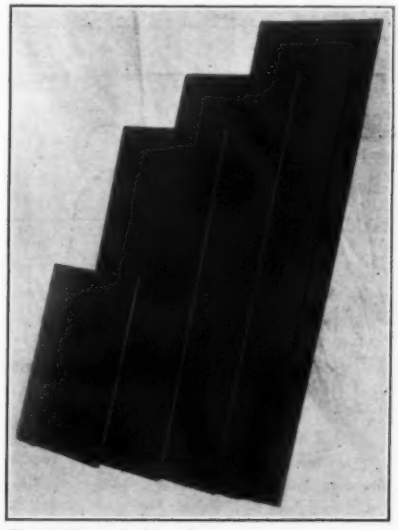
Because of the excellent properties of hard rubber for this purpose molded vacuum tube sockets with base for standard makes of detector and amplifier tubes are much in demand. They are supplied complete with metal contact pieces and binding posts.

Shock absorbers have recently been applied to tube sockets, which when so equipped "float" on rubber. This protects vacuum tubes from the mechanical shocks and vibrations which cause filament breakage, distortions and noise in the phones, especially when amplified. Vibrations vary the distance between grid and filament in the tube and thereby change the plate current. Thus any vibration, however imperceptible, will be detected by the amplifier. The regular socket, round or square, for standard or small base tubes, is mounted on a ring-type socket cushion or sub-base of molded live rubber, to which it is fastened by two screws and nuts. The cushion is then screwed to the base board of the set through four holes provided for the purpose.

Variometer Tubing and Rotors

On account of its exceedingly high insulation quality, hard rubber tubing has proved itself especially valuable as a support for winding inductances and for making tuning coils, loose couplers, vario-couplers, etc., especially in C. W. work. It is made with a wall thickness of ⅛-inch and in outside diameters ranging from 2 to 4 inches. There are cut lengths from 3 to 5 inches and stock pieces 30 inches long for cutting as desired.

For the rotors of variometers and vario-couplers molded rubber is also being extensively used. These rotors are molded in one piece with wiring surfaces countersunk 1/16-inch and are provided with a ¼-inch shaft hole. They come in two sizes, one



United States Rubber Co.

Hard Rubber Panels

having an outside diameter of 3-11/16 inches, a width of 2½ inches and a wiring surface of 7/16-inch each side, the other having an outside diameter of 3¼ inches, a width of 1⅝ inches and a wiring surface of 9/16-inch.

Graduated Dials

Graduated dials are used for the operation of condensers, variometers, vario-couplers, rheostats, potentiometers, etc. There is at least one dial on every set and the larger sets have four or five dials. There are some nine types with diameters ranging from 2¼ to 4 inches. All are molded with milled knob and dial plate

[1] "Hard Rubber in Radio Instruments." The India Rubber World, April 1, 1923, 419-420. "The Superiority of Hard Rubber Radio Panels." The India Rubber World, August 1, 1923, 694-696.

in one piece, and a grooved circular slot is molded in the back of each dial, corresponding with the graduations of the face, to fit a stop peg inserted in the panel. A few dials are molded with a special radial ribbed surface for fine tuning with the finger tips, giving almost the effect of a vernier adjustment without tiring the hand. All dials have a metal insert with set-screw for attachment to the instrument shaft. They are usually made to fit ¼-inch shafts, a split reducing sleeve or bushing being also provided for use on a 3/16-inch shaft. Most graduations are white illuminated and from 0 to 100, covering 180 degrees of the circle, although a few are from 0 to 9 over 270 degrees and 0 to 90 over 90 degrees. They may be had to read clockwise or counter-clockwise.

Vernier Control Attachments

For tuning in elusive distant stations some sort of vernier control is necessary. Ordinary vernier condensers or variometers with a gear ratio of only four or five to one are little better than tuning with the dial itself, however, and the electrical losses are as great as the losses in the instrument itself. But when the dial is equipped with a vernier control of rubber, sensitive tuning is secured without these electrical losses. The attachment consists of a rubber ring 5/8-inch in diameter, bearing against the dial tight

American Hard Rubber Co.

Radion Dials, Socket, Variometer Rotor and Tubing, Knob and Resiston Insulator

enough to prevent slipping, revolving on a shaft set in the panel beside the dial, and turned by a milled hard rubber knob. Due to the small diameter of the rubber ring engaging the dial, the ratio of transmission is reduced to such an extent that by moving the vernier a quarter of a turn the dial will advance less than half a degree or so.

A similar form of vernier control has the much greater ratio of 30 to 1. In this case the reduction is effected through a rubber friction wheel, one side bearing against the dial and the other side against the vernier shaft, on the outer end of which a milled knob is provided. There is no lost motion as in gear driven verniers, and the friction wheel can be instantly disengaged by pulling out the vernier knob, leaving the dial free when desired.

Knobs and Switch Handles

Milled and fluted rubber knobs of various sizes and shapes are made for operating crystal detectors, rheostats, verniers, panel switches, etc. They vary from ½ inch to 2-3/16 inches in diameter, from 3/8-inch to 1 inch in height, and have shaft holes varying from 1/8 to 10/32-inch, some of them also being equipped with two 8/32-inch side pin holes. The smaller knobs are chiefly switch knobs and have threaded metal inserts, while the larger knobs have set screws for attachment to the instrument shaft. Average knobs are not far from 1 inch in height and diameter and are usually made to fit ¼ or 3/16-inch shafts.

A variety of rubber switch handles are made for attachment to the ends and sides of panel switch levers and the ends of knife or throw switches, where they serve both as a finish and insulation. They vary in diameter from 3/8 to 7/8 inches, and in height or length from 3/8 inch to 1½ inches. Some of them have 8/32-inch screws imbedded, others 8/32-inch threaded bushings.

Another rubber knob in common use is for the standard telegraph key with either an 8/32-inch screw or threaded bushing imbedded.

Binding Posts

Much like rubber switch knobs are the milled knobs of binding posts. For exposed wire connections on radio sets they improve appearance greatly and have the distinct advantage that, being insulated, loose connections may be tightened while the set is in use without the interference of body capacity. The bottom parts are of nickeled brass with usually an 8/32-inch thread. For attachment to the set a machine or wood screw is provided as desired.

Telephone Receiver Shells and Caps

The demand for radio equipment has built up a big business in telephone receiver shells and caps. For these hard rubber has ever been the best material. While these parts vary slightly in dimensions, a receiver shell averages ¾ inch in inside depth and 1-15/16 inches in inside diameter. The external diameter of the cap is 2-9/16 inches, internal diameter 2¼ inches, with 24 threads corresponding to those on the shell.

Telephone Plugs

Jacks and plugs offer the most satisfactory method of attaching telephones to radio sets, and for the shell of the plug molded hard rubber is the best insulating material. These shells are usually made in halves held together by means of one or two screws and nuts, for which holes are molded, and shaped inside to accommodate the brass plug and accompanying parts for telephone cord connections. Some are cylindrical in shape, others flat.

Ear Caps, Cushions and Phonadapters

Rubber ear cushions fitting over the phones of any ordinary head set increase the effectiveness and comfort of radio reception and can be worn for hours without discomfort.

Ear caps of soft rubber fit any telephone receiver and any ear, excluding all extraneous sounds. There is a double wall partition, the ear making contact with the soft rubber instead of the hard phone cap. Two vent holes are provided to keep suction out of the ear.

Ear cushions accomplish the same result in a slightly different way. An outer container of light weight, soft, smooth rubber enclosing a circular pad of cushioned rubber permits the cushion to fit snugly into the crevices of the ear, excluding all outside noises, while an ample orifice through the center permits the free passage of every whisper of sound in full volume from the instrument. For those who cannot afford a regulation loud speaker, yet want to share their radio entertainment with family and friends, various ingenious adapters have been devised to assist in utilizing the family phonograph as an amplifying horn. Simplest of these is a single phonadapter, which consists of a rubber holder attachment with or without a brass tube insert. The tube, whether of rubber or brass, fits the tone arm of any standard phonograph, replacing sound box and needle, while the rubber attachment grips around the ear cap of one phone from a head

set or takes one of the special "loud speaker" phones. Old phonograph horns are often used in connection with a phonadapter.

A double phonadapter is a three-way aluminum tube adapter with three rubber bushings. Against the two opposite rubber bushings an ordinary head set is adjusted, while the third bushing slips over the tone arm of the phonograph after the sound box has been removed. Double phonadapters made entirely of molded rubber are also on the market, the ear cap of each phone being gripped as by the single phonadapter.

Another type of double phonadapter is made entirely of hard rubber with the opposite arms of the Y tube so shaped and threaded as to replace the ear caps of any standard head-set, the receiver shells with magnets and diaphragm being screwed into the threaded arms of the phonadapter.

The Gold Grain Detector

A new and ingenious use of hard rubber is found in the gold grain detector, which is a more easily operated and effective substitute for the ordinary crystal detector and catwhisker. It consists of a milled hard rubber cartridge revolving between two nickeled brackets screwed to the radio panel. Hermetically sealed within the rubber cartridge, where no air, dust nor moisture can enter, are the crystal and hundreds of grains of pure gold which make the contact with it. To operate, the cartridge is merely revolved while tapping slightly with the finger until the sounds come in loudest. No matter in what position the detector may be, many grains of gold must always touch the crystal and provide a multiplicity of contacts. This crystal detector is always ready for instant use and no test buzzer is necessary.

Bases of Many Sorts

Molded hard rubber bases, frames and tops of many sorts are much used for such instruments as variometers, couplers, condensers, tube sockets, induction coils, variable grid leaks, etc. They are of irregular shapes and sizes and made to special design and dimensions for the purpose intended.

Aerial, Lead-in and Wall Insulators

Insulators of hard rubber for outdoor aerials are noted for unusually high dielectric strength and strain resistance (tensile strength). They are usually about 3½ inches in length over all, with galvanized eyelets strongly imbedded in opposite ends.

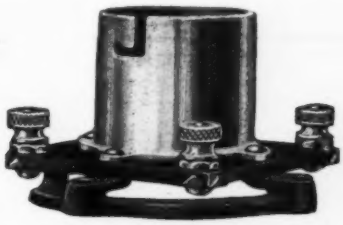
Porcelain tubes have proved unsatisfactory for carrying lead-in wires into the house, as they fail to keep out wind and rain or to insulate the lead-in in bad weather. Molded hard rubber insulators with brass conductors through their centers are rapidly replacing them. A thread is molded on the insulation and two rubber nuts turning on it exclude wind and moisture and insure perfect insulation. Two sizes are made, 10-inch for walls and window casings, 4-inch for window frames.

The common porcelain and composition knob insulators are too short and fragile for approved antenna insulation, and neat molded hard rubber column insulators have been designed expressly for carrying aerial and ground leads along the walls or roofs of buildings. These insulators, with a steel base molded into a hard rubber column, hold the wire five inches from the building, as required by the fire insurance underwriters. Any size of wire from No. 14 to No. 4 is held by two binding screws.

Flexible Rubber Insulated Wire

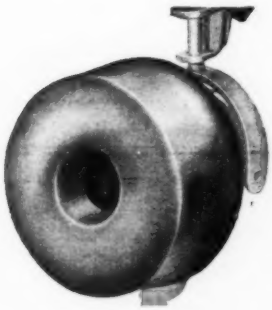
While cotton-wrapped tinsel cord only is used for radio telephone connections, much flexible, silk-covered rubber insulated wire of the single and double conductor types is used for making temporary connections on instruments and for carrying small amounts of current for lighting battery lamps, running leads to the filament of vacuum tubes, etc. The size in general use is 14 No. 34 copper, green silk covered.

M. & M. Co. Lead-In Insulators

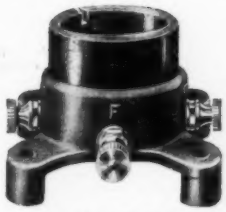


I. R. Co. Standard Base Tube Socket

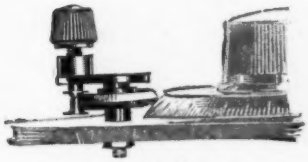
M. & M. Co. Wall Insulator



Bates Ear Cushion



I. R. Co. Small Base Tube Socket



R. U. Inc. Vernier Control

Other Uses of Hard Rubber

In radio as in telephone work, hard rubber transmitter mouthpieces and microphone handles are in common use on the hand type of microphones much used by announcers in radio broadcasting.

The widespread use of storage batteries in the home to light vacuum tubes and also for the plate circuit has popularized liquid-light hard rubber battery jars which protect floors, rugs and carpets from the rotting action of leaking sulphuric acid solution.

All told, the uses of rubber in radio are so many and varied, and the future promise of its application so great that one wonders not only what the morrow will bring forth but what radio would be today without it.

DURING THE YEAR 1923 JAPAN IMPORTED 161,903 PAIRS OF RUBBER SHOES, valued at $142,422. This represents a considerable increase over the year previous, when figures for such purchases stood at 142,678 pairs, valued at $123,014. While 81,185 pairs of American-made rubber boots were also imported by Japan in 1923, as compared with 74,784 pairs in 1922, the prices paid for such goods showed a decline in 1923 to $145,733, as compared with $181,584 in 1922.

What the Rubber Chemists Are Doing

The Influence of Glue on the Reinforcing Effect of Light Magnesium Carbonate in Rubber[1]

By H. W. Greider[2]

The author states that the purpose of the experiments described was to study the influence of small amounts of glue on the dispersion and reinforcing effect of light magnesium carbonate, the type of bulky and difficultly incorporated compounding ingredients. The following extracts outline the salient features of the paper.

Bulkiness in a pigment has often been considered as an indication of extremely small particle size. It seems probable that in the cases of gas black, magnesium carbonate, and lampblack, the characteristic of bulkiness is due, not alone to small particle size, but to a structure existing in the mass of particles.

The bulkiness of certain rubber pigments and especially of gas black and light magnesium carbonate, is a source of some trouble to the rubber compounder because of the difficulty in obtaining a reasonably complete and uniform dispersion of these pigments in a rubber mixing on the mill. If all the entrapped air is not expelled by careful incorporation, an objectionable microporosity may result, and a considerable proportion of the pigment may be present in the vulcanized compound, not as individual dispersed particles or flocculates of particles, but as undispersed aggregates or lumps of pigment. Bulky pigments, termed "dry" by the practical compounder, have a tendency to form compressed flakes between the rolls of the mill. When these flakes are subsequently taken up by the compound in the process of incorporation, it is extremely doubtful whether their dispersion is as complete as that of the portion of the pigment which does not flake. If the dispersion is not complete, a part of the true reinforcing power of the pigment is thus lost. Although this difficulty might be overcome by a very slow addition of the pigment, this would not be a practicable solution because of the greater time required and the excessive mastication of the rubber.

Experimental Procedure

The proportion of glue used was 1 per cent by weight of the rubber in the compound, or about 0.75 volume per cent, an amount so small as to give hardly any measurable reinforcement of the vulcanizate on its own account. The method adopted in these experiments was to mix the glue in the process of breaking down the raw rubber, adding it as a previously prepared dry compound of 50 per cent glue and 50 per cent smoked sheet. The light magnesium carbonate (technical grade[3]) and other compounding ingredients were then incorporated in the usual way in this 99:1 rubber-glue compound. The basic mixing used was a 50:50 pale crêpe-smoked sheet compound, containing 5 per cent of sulphur and 5 per cent of zinc oxide, and accelerated with 1 per cent of hexamethylenetetramine.

Compounds were prepared containing 0, 4, 6, 8, 10, 12, and 15 volumes of magnesium carbonate in the basic mix described (but containing 1 per cent of glue), and comparison of these compounds was made with a similar series containing no glue. It may be noted that even this small proportion of glue had the effect of reducing the time of cure to the selected optimum (slightly below maximum tensile strength) about 10 minutes on an 85-minute cure. In curing the compounds, conditions of maximum distortion (heavy overflow from mold under pressure) were maintained in order to minimize the "grain" effects in the vulcanizate resulting both from strains in the rubber phase and orientation of the pigment particles.

Results

The physical properties of rubber compounded with magnesium carbonate, without glue, are recorded in Table I. The influence of glue on these properties is shown in Table II. In Figure 1 the tensile strength and resilient energy values are compared graphically. With respect to tensile strength, it will be noted that this property is only slightly greater for compounds containing six volumes or less. Without glue the tensile maximum occurs at 6 to 8 volumes of magnesium carbonate per 100 volumes of rubber, and falls off steadily with further increments in the compound. With glue, however, the tensile strength continues to rise with increasing proportions of the filler and does not reach its maximum until 10 to 12 volumes have been incorporated, after which it falls off quite sharply. Except possibly in the case of the 10 and 12-volume compounds, the increase in rigidity appears to be only that which should be expected from the presence of the glue, as shown in the basic mix sample.

Resilient energy values are always higher with glue and do not fall off after 8 volumes have been incorporated, but continue to increase, reaching a maximum at 10 to 12 volumes, as with the tensile strength figures. It may be noted particularly that the effect of the glue is not only to increase the tensile strength and resilient energy capacity, but very considerably to broaden the effective compounding range of this pigment for its maximum reinforcing effect.

Table I—Data On Light Magnesium Carbonate (Without Glue)

Volumes Light $MgCO_3$ to 100 Volumes Rubber	Tensile Strength Kg./Sq. Cm.	Ultimate Elongation, Per cent	Total Resilient Energy, Kg. Cm./Cc.	Tensile Stress at 300 Per cent Elongation Kg./Sq. Cm. (Rigidity)	Coefficient of Abrasion Resistance	Abrasion Resistance Per cent of Basic Mix Resistance
0[a]	227	710	372	21.1	9.7	100
2	232	670	393	29.9	12.6	130
4	255	670	452	39.4	14.5	150
6	268	640	536	54.6	14.7	152
8	264	600	557	65.1	14.6	151
9	261	595	549	70.3	14.5	150
10	260	590	546	74.0	13.5	139
12	258	580	532	86.1	12.2	126
15	238	530	495	103.7	10.1	104

[a] Basic mix.

A better indication of the improved physical properties obtained is given by measurements of a composite index of these properties, abrasion resistance, recorded in the curves of Figure 2. The abrasion resistance is in every case greater than that of a similar compound containing no glue. The area *ABC* may be taken as representing the improvement in the dispersion of the pigment. Evidently, proportions of magnesium carbonate less than 6 volumes per 100 of rubber are sufficiently well dispersed so that glue does not greatly aid, but with larger proportions the effect is quite marked. With abrasion resistance as the criterion of toughening effect the range for maximum reinforcement has evidently been extended from 4—9 volumes to 4—12 volumes. The increase in

[1] Presented before the Division of Rubber Chemistry at the 66th Meeting of the American Chemical Society, Milwaukee, Wisconsin, September 10 to 14, 1923.

[2] Mellon Institute of Industrial Research, Pittsburgh, Pennsylvania.

[3] The specifications for technical light magnesium carbonate, suitable for use in rubber compounding, require hygroscopic moisture, not over 1.5 per cent; total ignition loss, between 54.5 and 56.8 per cent; free lime, none; heavy metals, none; insoluble in hydrochloric acid (silica, etc.), not more than 0.5 per cent; iron oxide and alumina, not over 0.5 per cent; lime as calcium carbonate, not over 1.0 per cent. Where tested by the wet-screening method 100 per cent of the material should pass through a screen having 128 meshes per centimeter (commonly designated 325 mesh).

abrasion resistance is most marked for the 12-volume compound, and with larger proportions the aggregative tendency of the pigment appears to be so great that the small quantity of glue present is insufficient to effect its complete dispersion in the mass.

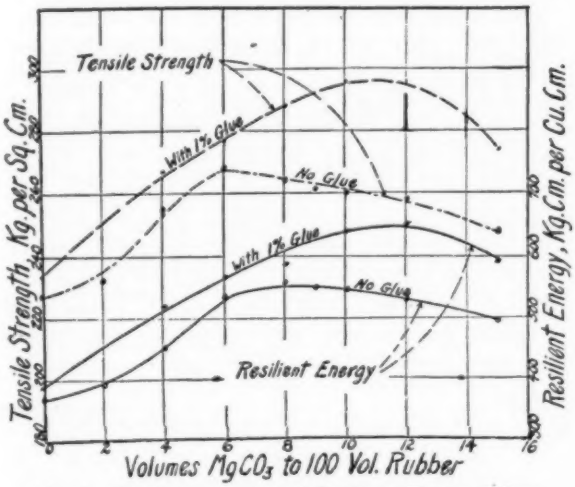


Fig. 1. Tensile Strength and Resilient Energy Values Compared

Table II—Data On Light Magnesium Carbonate (With 1 Per Cent Glue)

Volumes Light $MgCO_3$ to 100 Volumes Rubber	Tensile Strength Kg./Sq. Cm.	Ultimate Elongation, Per cent	Total Resilient Energy, Kg. Cm./Cc.	Tensile Stress at 300 Per cent Elongation Kg./Sq. Cm. (Rigidity)	Coefficient of Abrasion Resistance	Abrasion Resistance Per cent of Basic Mix Resistance
0a	234	695	388	24.6	10.8	100
4	267	660	519	43.1	15.5	144
6	277	640	565	56.3	16.7	154
8	288	620	582	68.6	16.0	148
10	296	600	641	88.0	15.8	146
12	296	590	650	96.8	15.5	144
15	274	550	590	105.5	12.5	116

a Basic mix.

Factors Governing Reinforcing Effects of Pigments

For any given pigment the quantity factor determining the degree of reinforcement is the volume ratio between the pigment and rubber phases. The other principal factors include the following physical properties of the pigments: (1) average particle size, specific surface; (2) wetting of the pigment by the rubber, or adhesion, surface tension, etc.; (3) flocculation of the pigment subsequent to its dispersion in the rubber matrix during vulcanization; and (4) particle shape of the pigment.

It seems quite possible also that the uniformity, or particle size frequency distribution of the pigment, may be an additional factor of some importance, although there are as yet no published investigations bearing on this characteristic in relation to the behavior of the pigment in rubber.

Pigment Characteristics and Physical Properties of Compounded Rubber

It appears that for any given toughening pigment the tensile strength is largely influenced by the volume of pigment incorporated, its particle size (specific surface as developed in the initial dispersion), and wetting or adhesion. The ultimate elongation is reduced by increasing volume ratio of pigment to rubber, and, in general, pigments of smaller particle size give lower elongation than is imparted by coarser fillers in the same proportions (within certain limits). The stiffness (rigidity) of the rubber is influenced by flocculation of the pigment, by its particle size, and probably by the degree of wetting by the rubber. Since the pigment particles are themselves of much greater rigidity than the rubber mass, they impart to it, depending upon their shape and degree of attachment to the matrix, a portion of their own rigidity, as shown by the fact that even coarse, nonflocculated pigments stiffen rubber to a limited extent where incorporated in large amounts.

Probably the uniformity of the pigment also has some effect on the stiffness of the vulcanizate. The resilient energy (work) capacity of compounded rubber probably depends upon all the following factors: particle size, adhesion, flocculation tendencies, uniformity, and particle shape of the pigment, as well as the volume incorporated, since resilient energy is a composite index of the physical properties above named. It may be supposed that the same thing is true, in a different degree, for the property of abrasion resistance. The importance of a high degree of attachment between the particles and the rubber after vulcanization, in its influence on physical properties, is clearly indicated by the fact that lithopone and colloidal barium sulphate, although of very small particle size and satisfactory uniformity, do not increase tensile strength, resilient energy, or abrasion resistance, and influence rigidity much less than would be expected from their particle size, because they lack high adhesion in the vulcanizate.

Behavior of Glue With Light Magnesium Carbonate

The explanation offered for the observed effects of glue, in enhancing the toughening effect of light magnesium carbonate, is that it effects an improved initial dispersion of the pigment due to increased wetting of the particles by the rubber. In milling the pigment, especially with the larger volume proportions, the increased ease of incorporation and lessened formation of flakes between the rolls are quite noticeable. An improved initial dispersion implies a smaller effective particle size and an increased specific surface. The improved wetting in the unvulcanized mass

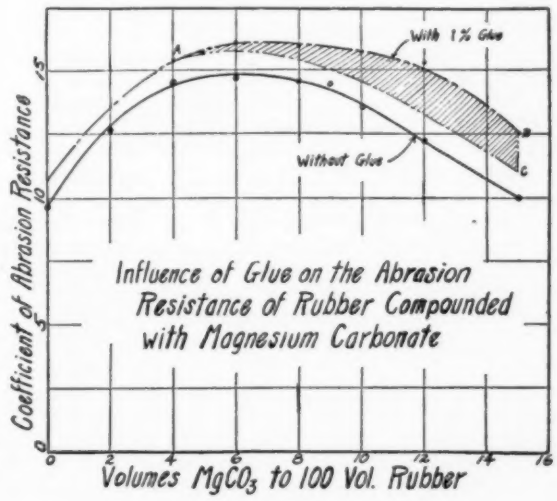

With 1% Glue
Without Glue
Coefficient of Abrasion Resistance
Influence of Glue on the Abrasion Resistance of Rubber Compounded with Magnesium Carbonate
Volumes MgCO3 to 100 Vol. Rubber

Fig. 2. Abrasion Resistance Curves

may, quite probably, be associated with an enhanced degree of adhesion between the particles and the rubber after vulcanization.

Since no marked increase in rigidity has been noted, it seems improbable that the glue has any great effect on the tendency of the magnesia to form flocculates during vulcanization. Improved dispersion of the pigment means a smaller number of aggregates of particles, which, in turn, implies a superior uniformity of particle size of the pigment as it exists in the vulcanized

product. There would, of course, be no effect upon particle shape except in so far as the dispersion of aggregates would make the average shape more nearly approach that of the (average) ultimate particle.

Chemical Patents

The United States

Colored Rubber Articles. The method of making toy balloons or other dipped articles which consists in mixing powdered aluminum with crude rubber, reducing the mixture to a solution with a suitable solvent, then building up the article on a form by dipping, dyeing the article and vulcanizing it—Arthur P. Whitten, Akron, Ohio. United States patent No. 1,484,919.

The Dominion of Canada

Rubber Product. A process for treating rubber latex or similar material which comprises combining a compounding ingredient with the latex, mixing these during coagulation until the coagulated latex is substantially able to retain the ingredient in approximately uniform dispersion; evaporating the moisture from the latex while continuing the mixing and vulcanizing the compounded rubber so obtained.—Ernest Hopkinson, New York, N. Y. Canadian patent No. 238,457.

The United Kingdom

Coloring Rubber. Crude rubber in any of its forms with or without admixture of gutta percha, fillers, sulphur, accelerators, etc., is treated with a solution of coloring matter in a solvent of rubber such as benzol, etc. The treated rubber is rolled into sheets and may be embossed by passing it through engraved rollers, and may be vulcanized.—D. J. Meyeringh and P. C. Wijnand, 53, Nes, Amsterdam. British patent No. 208,167.

Treating and Vulcanizing Rubber Latex. The vulcanization of latex and precluding coagulation is carried out in the presence of an accelerator at a temperature below those usually employed in hot methods. The following is a typical example. To 200 cc. of latex containing 30 per cent of rubber preserved with 1 per cent of ammonia is added a cream consisting of 20 cc. of water containing 3 grams of an accelerator, made under British patent No. 170,682, 6 grams of sulphur, and 3 grams of zinc oxide. After three days at ordinary temperature the mixture is heated in a boiling water bath for 2½ to 3 hours to obtain a coalesced but not coagulated mass of rubber. On five days' standing at room temperature, slight thickening occurs. After straining to remove the zinc oxide, etc., the rubber obtained is found to be vulcanized. The separated rubber obtained by coagulating may be washed, milled, sheeted, etc., similar to raw coagulum. Fillers may be added at any stage or the vulcanized latex may be applied to fabrics, paper, etc., by dipping, spraying, etc.—P. Schidrowitz, 57, Chancery Lane, London. British patent No. 208,235.

Compounding Rubber. Latex is coagulated by adding from 30 to 80 per cent of comminuted filling, coloring or vulcanizing agents and agitating the mixture. The coagulum is then subjected to the usual manufacturing processes.—O. H. Williams, 225 16th avenue, Columbus, Ohio. British patent No. 208,469.

Vulcanizing Compositions. A vulcanizing accelerator consists of a formaldehyde condensation product of an aliphatic amine. The condensation products of primary amines are more active than those of secondary amines. Example, 100 parts of rubber, 100 parts zinc oxide, 7 parts of sulphur, and 2 parts of the product obtained by the addition of stearic acid to tri-ethyl-trimethylene-tri-amine are milled together and vulcanized in open air at 275 degrees F. for 2½ hours.—P. C. Rushen, 28, Southampton Buildings, London, (Naugatuck Chemical Co., Naugatuck, Connecticut). British patent No. 208,779.

Vulcanizing Rubber. Two ingredients are employed to effect vulcanization by heat. One is incorporated in the compound, the other is applied to the surface. The surface ingredient may be in powder form mixed with starch powder. In the dipped goods process one of the ingredients may be incorporated in the rubber solution and the other dusted on the surface. When the accelerator is water soluble, the sulphur bearing rubber compound may be immersed in a hot aqueous solution of accelerator to effect vulcanization.—J. E. L. Barnes, 34, Castle street, Liverpool. British patent No. 209,528.

Germany

Patents Issued With Dates of Issue

390,358 (July 4, 1922). Method for making rubber sheet with colored designs of a rubber mass to which sulphur has not been added. Radium Gummiwerke G. m., b. H., Köln-Dellbrück.

390,452 (November 4, 1921). Method of making rubber masses containing clay. William Feldenheimer, Walter William Plowman and Dr. Philip Schidrowitz, London; represented by R. Heering, Berlin, S. W. 61.

391,635 (August 16, 1922). Method of making vulcanized rubber masses. Vultex Limited, St. Helier, Channel Isles; represented by L. M. Wohlgemuth, Berlin, S. W. 61.

Italy

Patents Issued With Dates of Issue

552,173 (March 3, 1923). Improvements in the processes of vulcanizing rubber. The B. F. Goodrich Co., New York, N. Y., United States.

553-156 (March 13, 1923). Process of devulcanizing rubber. James Smith, Glasgow, Scotland.

554-740 (March 20, 1923). Process for preparing substances colloidally soluble and of suspensions and emulsions. Leon Lilienfeld, Vienna, Austria.

554-212 (March 23, 1923). Formation of spongy blocks composed of pieces of marine sponge enveloped in rubber. Vianello Orazio, Trieste.

562-244 (July 12, 1923). Improvements in the manufacture of rubber. Philip Schidrowitz, William Feldenheimer and Walter William Plowman, London.

CARBONEX

Carbonex is a very convenient material with which to introduce carbon in colloidal condition into rubber. It is a coal tar product containing 50 per cent of such carbon. It not only supplies carbon as a pigment and reinforcing ingredient but it does so in a cleanly way, by suppressing the annoyance of black dust in the mixing room, at the same time serving as a valuable softening medium in milling and tube machine work.

OIL SOLUBLE RUBBER COLORS

To meet the demand for oil soluble colors which can be mixed with rubber and retain their brilliancy under hot vulcanizing conditions, there has been developed a series including yellow, blue, red, scarlet, orange and black. These colors have a very high pigmenting value and can readily be mixed with rubber. By judicious blending almost any shade or tint can be obtained with the list named.

Excess of color should be avoided, to prevent an effect similar to that caused by the blooming of sulphur, due to the excess color coming to the surface. The addition of a small quantity of palm oil minimizes this tendency. These colors, being soluble in benzol or the usual rubber solvents, can be used to produce bright colored cements. Colored cements of this kind have been successfully used for painting trade marks, lettering, etc. on rubber goods.

Soluble rubber colors can be applied to cold cured goods by dipping for a few seconds in a solution of one part dye to 1,000 parts of benzol or gasoline. The color thus applied is fast to either fresh or salt water. This process is applicable to a great variety of rubber novelties and to dyeing uncured, pale crêpe rubber if desired.

Interesting Letters From Our Readers

Dissimilarity of the Pratt and Alexander Processes

TO THE EDITOR:

DEAR SIR: In the article by Paul Alexander published in *Chemiker-Zeitung*, December 14, 1923, and referring to the Pratt dispersion process, claim is made for priority in producing aqueous *solutions* of crude rubber.

It is apparent that Alexander has no real appreciation of the nature of the material which Pratt produces, for in the articles previously written by me and referred to by Alexander, I described the Pratt process as producing an aqueous dispersion and not an aqueous solution of rubber. The Pratt process does not give an aqueous solution, the "solution" cannot be filtered, and the process is not one for the reclaiming of vulcanized rubber. On the contrary, it is a process for the dispersing of coagulated rubber in extremely fine particles, in water, these particles being prevented from coagulating by the presence of a protective coating, but being capable of recoagulation by the employment of the usual coagulating agents.

Alexander's work was not unknown to me when writing the articles published in THE INDIA RUBBER WORLD 67, 213; 68, 488: 1923. A careful study of it had been made, and it seemed quite obvious that neither in method of procedure nor in the products obtained was his process like that of Pratt. The British patents Nos. 14,681 (1905) and 25,735 (1906) may be used as fairly descriptive of Alexander's process.

Patent No. 14,681 is described as follows: "1000 kgs. of caoutchouc waste are heated to 150 C. together with 3000 kgs. of benzene, from 3 to 4 hours in a closed vessel under pressure. The undissolved constituents are then mechanically removed, the solution is returned to the pressure vessel and is heated to 150 C. for some time, say 3 hours, with 200 kgs. of sodium hydrate in 350 kgs. of water. The solution is then introduced into a retort, and is treated with steam as long as benzene passes off. The steam distillation must be conducted in such manner that a considerable portion of steam condenses in the vessel. The aqueous solution thus produced is filtered or separated from mechanical impurities by settling. If it is desired to separate the caoutchouc material from this solution, which can be used for the above purposes, it is precipitated by the addition of acids or by combustion gases. The same process is employed when using raw caoutchouc or other initial materials; it is only necessary to vary the quantity of the solvents and of the alkali somewhat according to the nature of the material employed."

In Patent No. 25,735, this process is varied slightly; for after heating with caustic soda, he proceeds as follows: "The mass produced is then brought into a distillation vessel together with an equal weight of water, and steam is led in. The benzene distills off and there remains a viscous mass of caoutchouc and an aqueous alkaline liquid. The liquid can easily be poured off from the caoutchouc mass. The viscous mass is then heated with any suitable proportion of water, such as 9 times its weight, for several hours under 3 to 4 atms. pressure. There is produced an aqueous solution of caoutchouc which may be applied in any desired manner, and from which the caoutchouc may be precipitated by agents such as acids, chimney gases or the like."

The principal difference between these two methods is that in the first the mass which is transferred to the distillation vessel contains only 350 kgs. of water, while the amount of water in the second case is over 4,000 kgs. From these processes he claims to obtain unvulcanized rubber in such condition that it is soluble in water, and from vulcanized rubber a product which is soluble in benzene even before the caustic is added.

Alexander should know that crude rubber is not soluble in water, yet he speaks of the material which he obtains as being a clear solution, capable of being filtered. Furthermore, vulcanized rubber is not soluble in any known solvent without undergoing a depolymerizing process, yet he speaks of separating the mineral constituents from vulcanized rubber by filtration of the rubber after the treatment with benzene only.

It is worth while to call attention to the fact that Alexander constantly speaks of solutions, whereas Pratt at no time claims that his rubber is dissolved, but, on the contrary, is merely dispersed in water in particles of practically the same size, and in the same condition of polymerization as they exist in the crude rubber.

The facts are that the two processes are utterly unlike in procedure and in the products obtained. At the time Alexander wrote his article for the *Chemiker-Zeitung*, he could not have known that Pratt had discovered an entirely new process for dispersing rubber and similar materials in water without the use of any organic solvents whatever and without the use of soap.

New York, N. Y., March 17, 1924. JOHN B. TUTTLE.

Fair Play for British Planters

TO THE EDITOR:

DEAR SIR: I have read with interest your editorials, "The Crude Rubber Price Contest," and "Hoover on Foreign Price Combinations," in your issue of February 1, 1924, and having discussed them with a number of prominent rubber men, I am putting before you the views of one of the leading men in the industry. He says:

"I do not think the American rubber manufacturers have anything to complain about in the prices of rubber today. For the best part of three years the producing companies were losing money hand over fist when America and other countries were getting rubber far below the cost of production. Excepting the older companies, who have planted their properties very largely out of profits on previous years when labor was so much cheaper, I do not think even today's prices give a commensurate yield on capital when it is borne in mind that any one planting rubber waits six years for his first return.

"On a well managed, old established estate today the average yield cannot be more than 10 per cent, and I would much sooner buy shares in old established companies at today's market price than plant a single acre of new rubber.

"Details were given a short time ago of the cost of planting 1,000 to 2,000 acres of rubber in Sumatra. Taking interest on capital into account it worked out at about £83 per ton per planted acre, and as there would be some further expenditure between the fifth and sixth years, as the crop for that year would not pay for the running of the estate, it was calculated that it would cost £100 per acre today to plant an estate of this sort.

"Taking this basis of £100 per acre, and 10*d*. per pound as probably the lowest average all-round cost for the industry on today's price of 1*s*. 2*d*., this leaves 4*d*. per pound. Taking a yield of 300 pounds per acre, which is all the yield you can estimate to get between the fifth and tenth year on a new company, this only leaves a return of 100*s*. per acre, equal to exactly 5 per cent.

"Now who is going to plant rubber for a 5 per cent return, which is what he would get spread over the first ten years? Capital will not go into the rubber industry at less than 10 to 15 per cent yield.

"Shares in older companies show a far better yield at today's prices, and tea is a very much better proposition. In my opinion, having been associated with the planting industry for a number of years, I certainly think that an average price of 1*s*. 6*d*. per

pound is required to run the plantation industry and secure the world's supply of rubber which would be wanted. It is to be admitted, of course, that when the restriction is taken off, further supplies will be available from the present areas planted, but this I think in a year's time will not be sufficient to keep the whole world's requirements for rubber going. Therefore, the longer the present price continues downward the greater will be the reaction one of these days.

"To ensure the prosperity of the manufacturing industry plentiful supplies of raw material are their greatest asset, and if they do not give a fair return to the whole of the planting industry but reckon only the cost as taken by the old established companies, largely planted out of profits of previous years, it means that there will be one of these days a shortage with the inevitable advance in price of the raw material, just the same as has happened with cotton. No manufacturer, in my opinion, is today getting such comparatively cheap raw material supplied to him as is the rubber manufacturer.

"This is the point of view that I hold, put briefly. It would be quite easy to give examples absolutely bearing out the position. American buyers should not take Ceylon costs as the basis of the industry.

"Now referring to the editorial, 'Hoover on Foreign Price Combinations,' I would like to suggest to you, and also to my friend Harvey Firestone, whom I know is vitally interested in this question, that the following suggestion should be carefully considered:

"England uses a large quantity of American cotton, which we all believe costs less to produce than rubber. America uses 300,000 tons of rubber. Why not exchange commodities for this year at the same price? Also let America take the rubber from our colonies and give us in return cotton; thus all the differences regarding price would disappear.

"America in my opinion today is applying the Restriction Scheme on cotton just the same as our colonies are on rubber, the difference being that the American Government is doing it through restriction of immigration, which has produced a scarcity of labor in the South, and we all know that the emigration of the colored people from the South to the North was due to the attraction of the big wages paid there. If America were to take off her restriction of foreign immigration, the colored men would drift back to the South, and by doing so would increase the larger planted areas necessary to produce more than enough cotton to supply the world's demand.

"I have talked price with a great many cotton users in England and on the Continent, and in no case have I heard them squeal like the American rubber manufacturers do at the price of rubber. American manufacturers do not pay any more for their rubber than manufacturers in other countries."

Liverpool, England. E. E. BUCKLETON.

The First Boston Rubber Exhibition

TO THE EDITOR:

DEAR SIR: I am informed that a rubber exhibition is to be held in Boston next year, and I should be obliged if you would give prominence to the fact that this exhibition has no connection whatever with those which have been under the control of "The International and Allied Trades Exhibition, Limited," since 1908, organized by the late Staines Manders, and since his death, by myself.

No authority has been given for describing the Boston exhibition as "The Seventh International Rubber Exhibition," and the same is a deliberate infringement of my title.

The time and place of holding the Seventh International Rubber Exhibition will be announced in due course.

H. GREVILLE MONTGOMERY, Director General.

43 Essex street, Strand, London, W. C. 2.

The Director General of the International and Allied Trades Exhibition, Limited, is in our judgment quite right in the position taken. The Boston Exhibition is no part of the series organized by the late A. Staines Manders and continued by H. Greville Montgomery. Quincy Tucker, who is the rubber adviser for the Boston management, informs us that the name selected is, "World's Rubber Exposition."—THE EDITOR.

Rubber Plywood

TO THE EDITOR:

DEAR SIR: In the February number you have an article on rubber and plywood. Can you tell me where I can get more information on this subject? To be able to use rubber instead of waterproof glue would mean much in this business, as most waterproof glues are very hard on shaper tools. Rubber should cut much better.

INTERESTED MANUFACTURER.

Comparative Summary Compiled from Questionnaires for 1923, 1922 and 1921

CRUDE RUBBER CONSUMED IN RUBBER PRODUCTS AND SALES VALUE OF SHIPMENTS

TIRES AND TIRE SUNDRIES	1923 Long Tons	1923 *Value	1922 Long Tons	1922 *Value	1921 Long Tons	1921 *Value
Automobile and motor truck pneumatic casings	157,523	$439,803	146,318	$423,271	88,055	$409,144
Automobile and motor truck pneumatic tubes	40,892	70,966	37,820	62,307	24,969	57,569
Motorcycle tires (casings and tubes)	394	1,540	428	1,582	144	1,109
Bicycle tires (single tubes, casings and tubes)	1,210	4,309	898	3,533	534	3,091
All other pneumatic casings and tubes not otherwise specified	18	129	529	2,258	455	2,049
Solid tires for motor vehicles	18,305	29,630	18,570	27,877	8,798	21,411
All other solid tires	302	775	352	1,027	185	1,251
Tire sundries and repair materials	2,308	11,317	2,288	10,338	1,979	10,837
Totals—tires and tire sundries	220,952	$558,463	207,203	$532,193	125,119	$506,461
OTHER RUBBER PRODUCTS						
Mechanical rubber goods	16,076	$84,859	15,603	$68,970	9,725	$61,498
Boots and shoes	16,204	123,631	11,985	102,688	10,602	91,086
Insulated wire and insulating compounds	3,319	32,076	2,198	21,955	1,048	11,717
Druggists' sundries, medical and surgical rubber goods	2,358	13,032	2,492	12,290	1,365	11,233
Waterproof cloth, clothing and rubber sheeting	3,052	24,030	2,669	16,134	1,531	13,259
Hard rubber goods	2,807	9,822	2,278	8,256	957	4,285
Heels and soles	5,082	16,882	5,938	18,762	**1,788	**7,444
Miscellaneous, not included in any of above items	5,106	20,625	3,817	13,837	2,156	12,764
Totals—other rubber products	54,004	324,957	46,980	262,892	29,170	213,286
Grand total—all products	274,956	$883,420	254,183	$795,085	154,289	$719,747
			1923	1922	1921	
Average number of manufacturers reporting			243	240	237	
Average number of employees			153,044	139,806	121,642	

CRUDE RUBBER INVENTORY

Total inventory of crude rubber on hand and afloat, December 31:	1923 Tons	1922 Tons	1921 Tons
Plantation	104,078	127,232	113,553
Pará	4,189	6,138	5,588
All other	1,118	2,169	10,618
Total	109,385	135,539	129,759

PRODUCTION AND CONSUMPTION OF RECLAIMED RUBBER

Tons of reclaimed rubber produced	69,534	53,788	34,156
Tons of scrap rubber consumed	88,008	68,844	46,036

*000 omitted.
**Included in mechanical rubber goods for first half of 1921.

Activities of the Rubber Association of America

Board of Directors Meeting

THE Board of Directors of the Rubber Association met on February 28. In addition to giving attention to routine matters relating to the association's activities, the Board approved the recommendation of the Foreign Trade Division that the Rubber Association become a member of the International Chamber of Commerce.

Division and Committee Meetings

One of the principal subjects discussed at the meeting March 7th of the Calendered Rubber Goods Section—Rubber Clothing Division, was cooperative advertising and publicity to promote the sale of rubberized waterproofed clothing. No definite conclusion was reached, however, but the subject is receiving serious consideration by the rubber clothing manufacturers.

The Auto Fabric Manufacturers' Division met at the Yale Club, New York, N. Y., on March 10.

The Rubber Heel and Sole Division met at the Yale Club, New York, N. Y., on March 11. After the adoption of by-laws to govern operations of the division, an executive committee was elected for the ensuing year, consisting of the Essex Rubber Co., The B. F. Goodrich Co., Goodyear Tire & Rubber Co., Miller Rubber Co., Panther & Panco Rubber Co., and the United States Rubber Co.

The Specification Committee of the Rubber Sundries Manufacturers' Division held a two-day meeting at Akron, Ohio, on March 11 and 12. Detailed consideration was given to the specifications of the Federal Specifications Board covering druggists' sundries of all kinds. The committee recommended certain changes in the specifications, which the representatives of the Federal Specifications Board who attended the meeting will present to the board for consideration.

The Toy Balloon Section of the Rubber Sundries Manufacturers' Division met in Cleveland, Ohio, on March 13. Tentative recommendations were adopted in connection with the standardization of form sizes and balloon weights. The next meeting of this section will be held at Ashland, Ohio, on April 24, when final action will be taken in the matter of standardization.

On March 24 there was a meeting of a sub-committee of the Mechanical Rubber Goods Division to consider plans for conducting an educational advertising campaign among hardware dealers and jobbers concerning standardization of garden hose sizes on the basis of ⅝-inch hose only. The campaign will be begun in April and will continue through September. The "Hardware Age," "Hardware World," and "Hardware Dealers' Magazine" will be the media and the advertisements will outline the benefits realized by manufacturers, dealers and consumers as a result of standardization on one size of garden hose.

The executive committee of the Tire Manufacturers' Division met at the Lotos Club, New York city, on March 26, when a schedule of load carrying capacities and inflation pressures for balloon tires was considered. Consideration was also given to a revision of the present Standard Tire Warranty in order to place a time limit on the acceptance of claims for adjustment.

The regular March meeting of the Traffic Committee has been postponed until April 7, which will enable members to be present at hearings before the Consolidated Classification Committee in New York. A number of transportation matters which affect the rubber industry will be considered at this meeting.

Statistics of Tire Dealers' Stocks

The Tire Manufacturers' Division is attempting to obtain data relative to current stocks of pneumatic and solid tires and inner tubes in the hands of dealers as of April 1. The association has distributed to 120,000 tire dealers throughout the United States a questionnaire asking for this information. The attempt has the endorsement of the National Tire Dealers' Association and that organization is cooperating with the Rubber Association in urging upon its members the desirability of furnishing the necessary figures. The statistics compiled from the questionnaire will be published in the rubber trade papers and in the automotive columns of the daily press. The present available statistics concerning tire manufacturers' production and shipments, and the published figures relative to automobile registration, together with the data to be developed concerning dealers' stocks, will make possible for the first time a complete realization of conditions in the tire industry.

Crude Rubber Questionnaire

The association will soon distribute to rubber manufacturers and crude rubber importers and dealers the usual quarterly questionnaire calling for information concerning the consumption of crude rubber in the manufacture of the various products of the rubber industry, sales value of finished products, number of persons employed in the industry, consumption of scrap rubber and production of reclaimed rubber and quantity of crude rubber on hand in the United States or afloat for the United States ports as of March 31.

Report of Inventory—Production—Domestic Shipments of Pneumatic Casings—Inner Tubes—Solid Tires

	Pneumatic Casings				Inner Tubes				Solid Tires			
	No. Mfrs. Reporting	Inventory	Production	Shipments	No. Mfrs. Reporting	Inventory	Production	Shipments	No. Mfrs. Reporting	Inventory	Production	Shipments
1922												
Twelve months 1922	..	58,401,086	30,698,139	29,221,899	..	72,463,938	38,137,181	36,656,435	..	2,320,650	786,603	688,845
Twelve months 1923	..	67,448,419	33,933,936	32,991,810	..	87,807,770	45,128,083	43,554,963	..	3,013,674	692,148	690,090
1923												
January	62	4,695,968	3,127,270	2,994,297	62	5,838,310	3,951,885	3,748,651	11	262,462	83,343	60,611
February	60	5,224,387	3,217,987	2,588,639	60	6,771,958	4,039,202	3,001,697	11	270,191	75,457	63,394
March	58	5,670,601	3,865,726	3,322,637	57	7,740,945	4,375,414	3,828,315	11	265,843	79,788	77,144
April	56	6,088,272	3,539,326	2,976,160	55	8,394,184	4,259,558	3,535,635	10	260,631	71,468	72,609
May	57	6,906,594	3,659,986	2,757,764	57	9,292,223	4,317,537	3,414,115	10	268,323	77,288	67,147
June	55	7,040,600	2,956,943	2,502,185	54	8,924,326	3,590,011	3,581,060	10	283,425	72,445	52,126
July	54	6,471,124	1,992,989	2,539,425	52	7,527,281	2,666,354	3,942,247	10	263,891	42,345	45,219
August	58	6,058,387	2,355,915	2,807,432	53	6,950,578	3,577,922	4,304,034	10	262,810	48,141	45,925
September	60	5,397,557	2,029,581	2,623,775	55	6,457,455	3,254,575	3,683,574	10	249,379	37,074	45,971
October	59	4,876,352	2,361,340	2,819,583	55	6,898,425	3,855,244	3,595,737	10	234,945	37,285	48,065
November	55	4,689,329	2,399,725	2,456,296	53	6,693,639	3,451,716	3,422,426	11	213,686	32,577	49,471
December	56	4,329,300	2,437,148	2,603,617	52	6,318,446	3,288,665	3,497,472	10	178,088	34,937	62,408
1924												
January	56	4,808,084	3,220,292	2,785,335	51	6,720,247	3,887,959	3,475,713	10	182,782	53,604	43,375

"Production" and "Shipment" figures cover the entire month for which each report is made. "Inventory" is reported as of the last day of each month.

"Inventory" includes tires and tubes constituting domestic stock in factory and in transit to, or at, warehouses, branches (if any), or in possession of dealers on consignment basis, and as a total represents all tires and tubes still owned by manufacturers as a domestic stock.

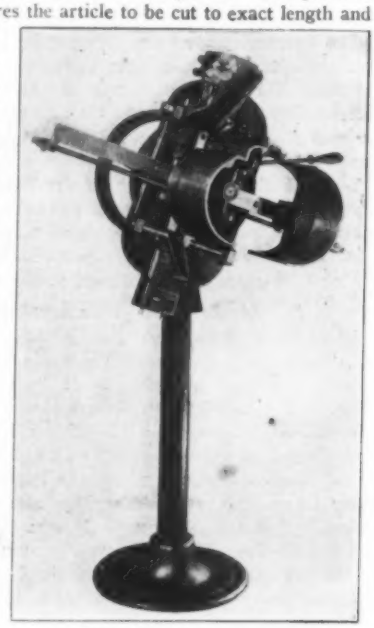
"Shipments" includes only stock forwarded to a *purchaser* and does not include stock forwarded to a warehouse, branch, or on a consignment basis, or abroad.

(Compiled by The Rubber Association of America, Inc.)

New Machines and Appliances

Tread and Bead Measuring and Cutting Machine

THE illustration shows the latest type of high speed rotary cutter that is built under the Artos patents. In operation the machine measures the article to be cut to exact length and then skive cuts it. This is useful for raw tire treads with or without the breaker and cushion. This machine can be adjusted to cut any length from 30 inches up to 288 inches and is built in widths of 6, 9, 14 and 20 inches. When cutting standard tire treads the machine will handle 30 treads per minute.



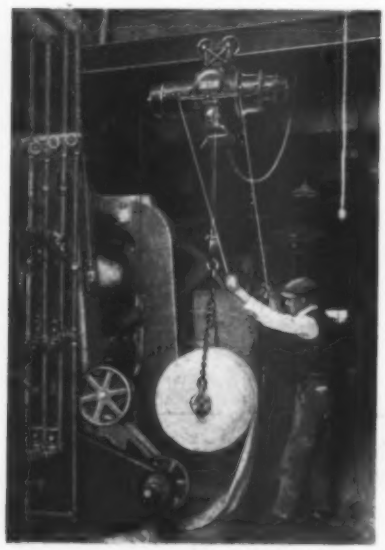
Utility Tread and Bead Stock Cutter

These machines are built for cutting raw or cured clincher bead stock to length with square ends, as well as any other dimensioned material required in lengths from 3½ to 14 yards.

The machines are built in fifteen different types, therefore providing a machine suited for almost every cutting job. When operating on materials like patch gums, etc., in lengths under 18 inches, the machine produces 7,200 pieces per hour.—Utility Manufacturing Co., Cudahy, Wisconsin.

Electric Lift-About Hoist

In every rubber manufacturing plant where calendering is done or heavy molds or products are handled, some form of portable hoisting device is essential to expedite production. A very efficient electric hoist or lift-about is that shown in the illustration in use before a rubber calender. Such a mechanical helper is equal to the severe task of lifting 1,000 to 1,800 pound rolls of stock to and from a calender. In some mills this duty is maintained on a 24-hour schedule with approximately 180 lifts a day. The electric lift-about is displacing hoists which are more costly to operate.—Shepard Electric Crane & Hoist Co., Montour Falls, New York.



Shepard Electric Lift-About

Measuring Machine for Insulated Wire

An accurate and durable machine designed for rapidly measuring plain or insulated wire or cables is shown in the illustration.

The machine is dial registering with capacity up to 10,000 feet. It is supported on a substantial pedestal.

In operation, the wire is led to and from the large vertical measuring wheel between pairs of vertical guide rollers. The measuring wheel is attached to a hinged arm provided with an adjustable weight and is connected to the dial indicator by suitable gearing. In its passage through the machine the wire is supported on three horizontal rollers, passing between the middle one and the measuring wheel. Sufficient pressure is supplied by the adjustable weight to revolve the measuring wheel without slippage and the wire measurement is recorded on the dial.—Textile Machine Works, Reading, Pennsylvania.

Dial Machine for Measuring Wire

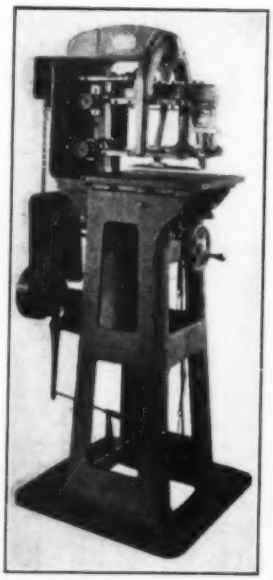
Machine for Cutting Crêpe Soles

Thirty years ago cutting rubber shoe soles was done wholly by hand for the reason that machine-cut skived edges were then an unsolved problem. Volume production necessitated the solution of the problem and the familiar Wellman sole cutting machine was perfected.

The latest type of this machine, which is shown in the accompanying illustration, is equally efficient for cutting compounded sheet soling for rubber footwear or the unvulcanized crêpe soles of the modern sport shoe.

The machine is a compact power-driven unit mounted on an open cast pedestal. The mechanism includes a cam device which guides the disk as it cuts the rubber stock, following the outline of a metal sole pattern.

The pattern may be of any size or form within the scope of the machine and need not necessarily be that of a sole. The cutting disk may be set to give any desired angle or skive on the edge of the sole or may cut the edge square if desired.



Wellman Crêpe Sole Cutting Machine

Unvulcanized crêpe sole rubber is unusually thick, tough and fibrous, but this machine has met the new demand upon it for cutting crêpe sole stock without any change in the type or method of operation. The adjustment of the knife offers a choice from a straight edge sole to one of any desired bend. The sole thus cut requires no further trimming before application to the leather shoe.—Wellman Co., Medford, Massachusetts.

Bi-Record Vulcanizing Thermometer

The bi-record vulcanizer recording thermometer here illustrated has been developed as a result of extensive investigations in the operation of a vertical vulcanizer. Contrary to common opinion the temperature throughout a vertical tire vulcanizer is not uniform. A difference of two degrees or more exists between the top and bottom of the vulcanizer.

Tycos Bi-Record Thermometer

This condition may be entirely overcome by increasing the circulation of the steam in the heater, using automatic temperature control for condensation discharge, this control being set within a few degrees of the operating temperature in the heater.

The same tire vulcanizer chart may be used to record the operation of the condensation control. The heater temperatures are recorded on the outer scale which has an open time scale admitting reading within very close limits, and the condensation temperatures on the inner scale. The pens for each scale operate on the same time line, therefore there is no time correction to be applied.

With this instrument temperature relations may be recorded between any two points in the vulcanizer or between the vulcanizer and the condensation chamber.—Taylor Instrument Companies, Rochester, New York.

Portable Safety Saw

Onan Electric "Safety" Saw

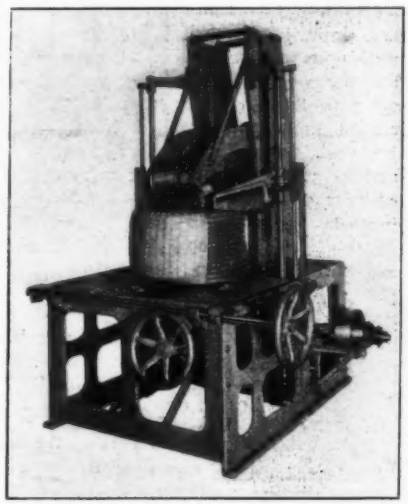
In every rubber plant portable handy power tools, such as the one here shown, are advantageous in promoting efficiency and saving time. The ability of this tool has the same relation to sawing as a portable electric drill has to drilling. It can be moved about at will or be accorded a permanent location.

Although similar in construction to the ordinary cut-off saw used in the carpenter shop or pattern room of rubber mills, this machine has the advantages of all-steel construction, ball bearings, and a safety circle guard. While primarily designed as a cut-off, ripping or mitering wood saw, it suggests other uses to the progressive rubber engineer.

Equipped with a circular knife-edge disk in place of a saw this tool would be very handy in the compound room for cutting crude and reclaimed rubbers for batch weighing; in the make-up rooms for cutting slab or tubed stocks for molding, or in squaring and cutting to lengths various sorts of cured goods.—D. W. Onan & Sons, 43 S. Royalston avenue, Minneapolis, Minnesota.

Shuttle Type Hose Baling Machine

The general mechanism of the shuttle type machine, for baling garden hose in 500 feet lengths, is shown in the illustration. This machine stands seven feet high on a six feet square area. Its operation is simple. The coil of hose is placed on the table between the upper and lower revolving cones. The upper cones are pressed down firmly with any pressure desired, regulated by a hand wheel, forming the coil into a compact bundle. The wrapping material roll is placed within the shuttle.



Terkelsen Hose Wrapping Machine

Starting the machine causes the bale to revolve slowly upon the cones while the roll of wrapping material passes down through the center of the bale and up on the outside, the wrapper being delivered through a tension system which insures a uniform tight wrap.

It is possible with this machine to wrap a bundle up to 12 inches high, the inside of the bale to be not less than 12 inches and outside diameter up to 36 inches. The package is attractive, strong and economical as compared with the former method of reeling hose.—Terkelsen Machine Co., 326, A street, Boston, Massachusetts.

Mechanical Washer for Rubber Goods

Small molded rubber articles and lathe-cut pieces are much improved in appearance if well cleaned or finished by washing in water with or without the addition of some cleansing medium.

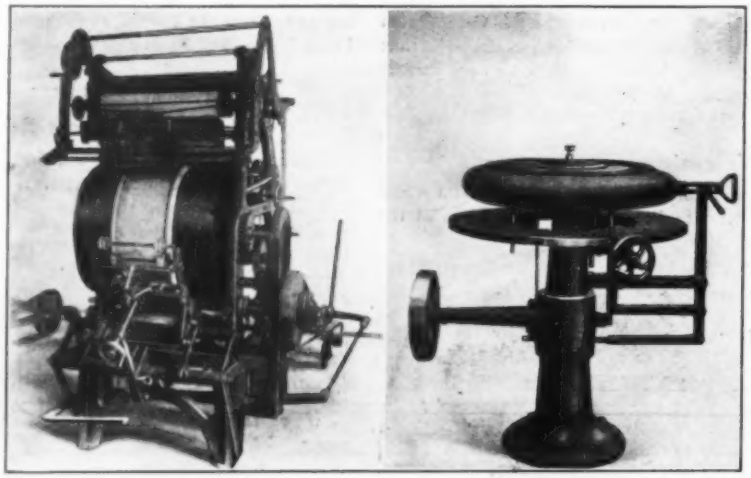
Meaker Washing Machine

The illustration shows a machine especially designed for that sort of work on small metal parts, and it is equally well adapted for washing rubber pieces.

The goods to be cleaned are placed in the feed hopper by continuous or intermittent operation and from there are guided into the drum. The drum is slowly revolved at approximately

six revolutions per minute for a few minutes, and during this time, boiling solution, by mechanical means, is being continually thrown over and around the pieces to be cleaned, which are changing positions so that all their surface and every corner is being reached during the operation.

The principle of the machine is similar to the cylinder type laundry and household washing machine. One-half horsepower is ample with full load operation. This unit is a belted, direct-driven machine, easily operated with accessible adjustments such as clutch lever to stop and start drum. Complete with steel tank, steam coils and driving pulley the unit weighs about 1,700 pounds.—Meaker Galvanizing Co., 1243 Fulton street, Chicago, Illinois.



CASING BUILDER CASING EXPANDER AND SHAPER

Gautier Flat Band Tire Making Machines

Flat Band Tire Building Machines

The manufacture of cord tires by the flat band method is successfully carried out abroad by the use of the two English machines here illustrated.

The semi-automatic case making machine is shown on the left in the picture, in which a completed tire band is represented on the drum. Rolls for holding the supply of cut fabric are located over the building drum, which is gear driven. Adjustable tools and guides for placement of the fabric plies and beads are arranged in front for convenient use of the operator. The machine is belt driven, started and stopped by foot treadle control or by hand applied friction clutch.

The special features of this machine include high and low speed gears for use according to requirements; the winding accuracy is such that the fabric is applied on the drum exactly, and the strips can be cut so nearly to width that trimming is unnecessary and there is no waste.

The bead cores are placed in position by a special device and the cord fabric covering the bead cores, as well as the bead strips, are rolled and fixed automatically, securing regularity of shape not obtainable by hand construction. Perfect casings can be built on this machine in a few minutes and will fit the vulcanizing molds exactly and thus save much labor in loading the molds for curing.

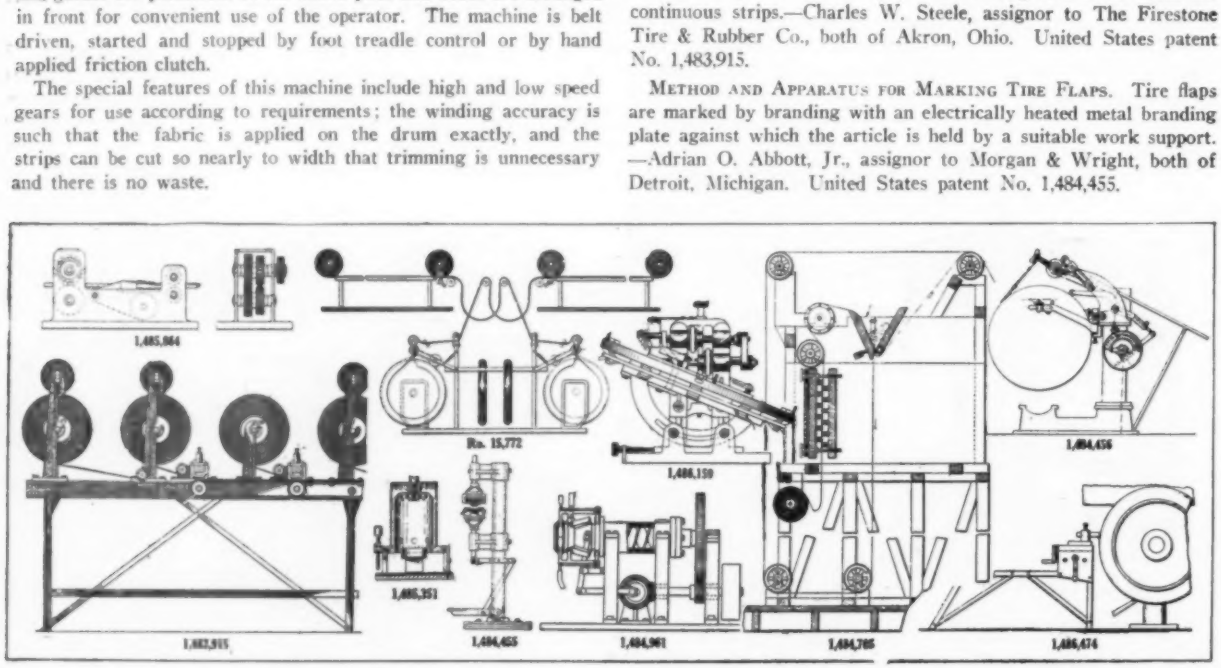
The outstanding features of the tire expanding and shaping machine shown on the right in the picture are these: entirely automatic; adjustable for different sizes of straight side or clincher tires; guides enable tread and side walls to be applied with precision; electrically heated and supplied with a rheostat for necessary adjustment of temperature.

The time required for expanding is about five seconds. The machine is indispensable for shaping the casing from the form of an endless band; for fixing the tread and rubber on the side walls, and for repairing and retreading tires.—Gautier Processes, Ltd., Glenville Grove, New Cross, London, S.E. 8.

Machinery Patents

Tire Boot-Building Machine. A combination of fabric and sheet rubber supply holders successively arranged for forming these materials into a continuous strip of built-up layers and an intermittently actuated die press for cutting tire boots from the continuous strips.—Charles W. Steele, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio. United States patent No. 1,483,915.

Method and Apparatus for Marking Tire Flaps. Tire flaps are marked by branding with an electrically heated metal branding plate against which the article is held by a suitable work support. —Adrian O. Abbott, Jr., assignor to Morgan & Wright, both of Detroit, Michigan. United States patent No. 1,484,455.



Tire-Building Machine. By means of this device any desired percentage of stretch may be given to the fabric as it is placed

upon the core, and the tire manufactured rapidly and efficiently. The tension mechanism is set by means of index gearing and connections which adjust cores within the feed pulleys to produce the required amount of tension in the fabric.—John Axel Ahlfors, assignor to The Knight Manufacturing Co., both of Canton, Ohio. United States patent No. 1,484,456.

Machine and Method of Coating Fabrics. A machine for coating fabrics combining a tension, a draw roll, and a coating device comprising a trough, between two adjacent surfaces of which the cloth is drawn. The distance between these surfaces and the cloth regulates the thickness of the coating applied.—D. D. Frothingham, of Salem, and R. U. Sawyer, of Winchester, Massachusetts. United States patent No. 1,484,705.

Machine for Making Gaskets. A special delivery head is attached to a tubing machine by which the plastic rubber stock is forced out in the form of a flaring tube, and a ring or gasket is cut from the protruding portion by the shearing action of a cutter passing down an inclined surface. The cutter is operated by a combination of levers actuated by gearing driven in unison with the tubes from the same source of power.—Willis J. Peele, Chicago, Illinois. United States patent No. 1,484,961.

Thermostatic Control of Heat in Repair Vulcanizers. The combination with a plate to be applied to the article to be vulcanized, of a heated element movable into contact with the plate, to heat it by conduction, and control of the supply of heat to the plate by automatically separating it from the heating element.—Walter H. Welch, Bristol, assignor to Harvey Frost & Co., Limited, London, both in England. United States patent No. 1,485,351.

Tire Bead and Machine. Instead of wires of uniform cross section, a wire of non-uniform section is used for making tire beads. And instead of employing a wire which is crimped, corrugated, twisted or otherwise deflected as to its axis, the wire has an undeflected axis and an irregular exterior. The irregularities permit the wire to become bedded immovably against the adjacent wires and also firmly gripped by the surrounding materials, guarding against elongation or change of position of the wires in the bead.—Harvey F. Maranville, assignor by mesne assignments to The Firestone Tire & Rubber Co., both of Akron, Ohio. United States patent No. 1,485,864.

Heel Breast Trimming Machine. This comprises a frame supporting a driving mechanism and conveying device for supporting and conveying the heels to the trimming knives so that only the lower breast margins of the heels may be trimmed. The parts are also adjustable so that a proper relation of operative parts may be secured to position the heels for trimming and discharging them.—George C. Reeves, John C. Hintz, and Rees Beynon, assignors to Dryden Rubber Co., all of Chicago, Illinois. United States patent No. 1,486,159.

Machine for Trimming Solid Tires. A movable trimming blade is mounted in a tool post supported on an adjustable carriage permitting its application to the rim of a solid rubber tire as it revolves on a supporting pedestal as shown in the figure.—Harry L. Baker, Los Angeles, California. United States patent No. 1,486,474.

Apparatus for Manufacturing Tires. A layout for the elimination of booked plies and their storage in connection with tire manufacturing comprises a pair of stock tables upon which the operators join together in continuous strips the ends of rubber coated bias cut fabric which loops over a series of rollers on its way to the cores upon which it is finally applied and stretched by the system of rollers at the building machine. The looping serves as a temporary storage of strip stock. In the building machine used the tire cores occupy different position according as they are receiving the plies underlying or overlying the beads.—W. C. Stevens, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio. United States reissued patent No. Re. 15,772.

Other Machinery Patents

The Dominion of Canada

238,280 Tire treating apparatus. S. M. Shull, Lewistown, Montana, U. S. A.

238,310 Last holding device. E. L. Patten, New Haven, Connecticut, U. S. A., assignor to The Canadian Consolidated Rubber Co., Ltd., Montreal, Quebec.

238,311 Stripping device. F. F. Jamieson, assignor to The Canadian Consolidated Rubber Co., both of Montreal, Quebec.

The United Kingdom

208,243 Machine for washing rubber, etc. P. E. Young, 2 Fort street, Fairhaven, Massachusetts, U. S. A.

208,383 Apparatus for vulcanizing rubber in long lengths. E. C. R. Marks, 57 Lincoln's Inn Fields, London.

208,518 Method and apparatus for preparing cord fabrics. Morgan & Wright, Detroit, Michigan, assignee of A. E. Jury, New York, N. Y., both in U. S. A.

Germany

Patents Issued With Dates of Issue

390,357 (November 17, 1922). Apparatus for washing rubber and the like. Fritz Kempter, Heimstrasse 9, Stuttgart.

390,678 (January 13, 1923). Rolling machine for treating rubber or other plastic materials mixed with solvents. Adolf Sadger, Kaiserkorso 69, Berlin-Tempelhof.

390,679 (August 6, 1921). Apparatus for forming hollow goods of rubber. Paramount Rubber Consolidated, Inc., Philadelphia, Pennsylvania, United States; represented by Dr. Breiterbach, Düsseldorf

390,768 (July 1, 1922). Apparatus for vulcanizing pneumatic tires. Charles Auguste Tissot, Grenoble, France; represented by R. H. Korn, Berlin, S. W. 11.

391,168 (December 1, 1921). Vulcanizing apparatus for repairing objects of rubber. Maximin Mompiou, Algiers, Algeria; represented by G. Pedreux and A. Weickmann, Munich.

391,354 (June 5, 1921). Equipment for making rubber tires. Kuno Schragin, Alexanderstrasse 30, Berlin.

391,386 (May 23, 1922). Apparatus for mass production of rubber hollow goods. Continental-Caoutchouc-und-Gutta-Percha-Compagnie, Hannover.

Design Patents Issued With Dates of Issue

863,143 (December 3, 1923). Device for shaping long tubes, particularly of fabric. Meirowsky & Cie., A.-G., Porz-am-Rhein.

863,144 (December 3, 1923). Mandrel, particularly for long tubes, especially of fabrics. Meirowsky & Cie., A.-G., Porz-am-Rhein.

Other Process Patents

The United States

15,772 (Reissue). Method and apparatus for manufacturing tires. W. C. Stevens, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio.

1,484,731 Manufacture of sponge rubber articles. F. S. Malm, Chicago, Illinois, assignor to Western Electric Co., Inc., New York, N. Y.

1,485,170 Method of making pneumatic tires. L. P. Destribats, Trenton, N. J.

1,485,864 Method of making a tire bead. H. F. Maranville, assignor by mesne assignments to The Firestone Tire & Rubber Co., both of Akron, Ohio.

The Dominion of Canada

238,010 Method of making a liquid belt dressing of melted vulcanized rubber. L. M. Fisher, Clarksdale, Missouri, U. S. A.

238,290 Method of making a pneumatic tire. C. E. Veil-Picard, Paris, Seine, France.

238,545 Method of vulcanizing rubber and fabric articles. D. E. Hennessy, Milwaukee, Wisconsin, assignor to The Fisk Rubber Co., Chicopee Falls, Massachusetts, both in U. S. A.

Germany

Patents Issued With Dates of Issue

390,287 (December 1, 1922). Method for making metallic surfaces on rubber combinations containing sulphur. Ivan Gates Warren, Caterham Valley, England; represented by K. Walther, Berlin-Friedenau.

390,726 (February 18, 1919). Method of making tires and the like. Hermann Berg, Königswinter-am-Rhein.

391,387 (November 20, 1920). Method of vulcanizing tires and similar rubber goods. The B. F. Goodrich Co., New York, United States; represented by V. G. Benjamin and H. F. Wertheimer, Berlin, S. W. 11.

391,848 (January 19, 1922). Method of making toy figures of rubber. Radium-Gummiwerke, G.m.b.H., Köln-Dellbrück.

392,021 (March 24, 1921). Method of making hollow bodies of rubber. Paul Hagemann, Herderstrasse 41, Magdeburg.

The Editor's Book Table

Book Reviews

"SYNDICAT PROFESSIONNEL DES CAOUTCHOUC, GUTTA-Percha, Tissus Élastiques," and "Syndicat Professionnel des Fabricants de Fils et Câbles Électriques." Annuaire 1923-24. Published by the above societies, 18 Rue Duphot, Paris. Paper, illustrated, 280 pages, 8½ by 5¼ inches.

THIS annual is in two parts, one relating to the Association of Manufacturers of Electric Wires and Cables and the other to the Association of manufacturers of rubber, gutta-percha and elastic fabrics. Each part gives the Association's statutes, list of members with brief description of their principal manufactures, a classified list of firms, besides notes regarding organizations which are of interest to the above groups and different government departments. The little book should be very serviceable to American firms desiring to have at hand a list of representative French manufacturers of rubber and electrical goods.

"ANNUAL REPORT OF BUREAU OF STANDARDS FOR THE Fiscal Year Ended June 30, 1923." Published by the Department of Commerce, Government Printing Office, Washington, D. C. Paper, 330 pages, 6 by 9 inches.

This well-known publication contains as usual much detailed information of a scientific and technical nature. Among the many subjects under consideration are included the reports of certain researches in connection with rubber and rubber compounds, as well as important data regarding balloon fabric and various textiles.

"COTTON FACTS—EDITION OF 1923." REVISED AND ENLARGED by C. W. Shepperson. Published by Shepperson Publishing Co., 16-18 Exchange Place, New York, N. Y. Cloth, 272 pages, including index, 4 by 7 inches.

Several new tables of statistics and various other unusual features appear in this forty-eighth annual edition of this useful and standard publication. One of these new features is a map prepared by the Bureau of Entomology, United States Department of Agriculture, in order to show the extent of the ravages of the cotton boll weevil during the years from 1892 to 1922 inclusive.

"TROPICAL AGRICULTURE." THE MONTHLY OFFICIAL JOURnal of the Imperial College of Tropical Agriculture, published at St. Augustine, Trinidad, B. W. I. Paper, 16 pages, 8¼ by 11 inches.

The initial number, dated January, 1924, gives assurance that the new publication will effectively serve the purpose of assembling and disseminating the great fund of scientific information regarding the cultivation of tropical crops. One of the notable contributions to the issue is an article on the aims and work of the Imperial College by Sir Francis Watts, K. C. M. G., D. Sc., stressing the advantages of systematic instruction in the raising of rubber, cotton, sugar, cacao, and other tropical products similar to that which farmers in temperate regions receive from agricultural schools. Inspiring to the progressive cultivator is an article by Professor H. A. Ballou, M. Sc., on tropical entomology, recounting important achievements in large-scale control of insect pests and pointing out promising paths of research.

Other articles by specialists deal with various phases of agriculture; excellent reviews of new literature on germane subjects; a résumé of what the college has accomplished; commerce and transport information; reports of recent chemical progress, and a review of the markets for the chief products of the tropics in both hemispheres.

"CRUDE RUBBER AND COMPOUNDING INGREDIENTS" should be in the library of every progressive rubber man.

Recent Articles Relating to Rubber

The Determination of the Activity of a Vulcanization Accelerator[1]. The simplest and most generally applicable test mix for accelerators is one containing rubber, sulphur, zinc oxide and accelerator, vulcanized in steel molds under hydraulic pressure in steam. The factors affecting the activity of the accelerator in this mix and in these conditions are the purity, concentration, and specific surface of the substances used, and the temperature of vulcanization. These factors are considered in detail.—G. Martin and W. S. Dewey, *Journal of the Society of Chemical Industry*, February 22, 1924, 31 T-34 T.

The Tensile Strength of Rubber. Practical discussion on the overrated importance of tensile strength determinations. Test made by determinations of "slope" and viscosity are preferable to tests of tensile strength. Figures for tensile strength are influenced by the length of cure. The tensile strength for quicker curing sheet and slower curing crêpe from the same latex is found to be the same, so that there is no real superiority of smoked sheet over first quality crêpe. Slab rubber does not show a higher corrected tensile than sheet or crêpe.—O. de Vries. *Journal of the Society of Chemical Industry*, March 7, 1924, 47T-52T.

Dispersing Rubber in Water. The Pratt Theory and practice of dispersing of crude rubber, rubber compositions, etc., in water. Typical examples of dispersion process and application of the product in rubber working and various other industrial applications.—John B. Tuttle. *Chemical and Metallurgical Engineering*, March 10, 1924.

Official Methods of the German Association of Electro-technicians for the Analysis of Rubber. (French.) *Le Caoutchouc et la Gutta Percha*, February 15, 1924, 12086-87.

Formulas of rubber mixings. Five formulas for storage battery jars, one for heels, and six for balloon manufacture.—Rudolph Ditman. *Le Caoutchouc et la Gutta Percha*. February 15, 1924, 12084-85.

Rubber Substitute Tire Filler of Colza Oil. (French.) Albert Hutin. *Le Caoutchouc et la Gutta Percha*. February 15, 1924, 12085-86.

Rubber Latex and Its Technical Importance. (German.) A. van Rossem. Netherlands Rubber Institute, Delft. *Gummi-Zeitung*, February 15, 1924, 307-9.

Components of the Serum of Hevea Latex and Influence on Rubber Properties. The total weight of rubber obtained by the evaporation of latex is 8-10 per cent greater than that produced by coagulation; the evaporated rubber has approximately the same viscosity (in solution) as coagulated rubber, but vulcanizes more rapidly and has a higher "slope." The proportion of serum solids retained in the rubber has an important bearing on the relative effect of coagulation from diluted latex and on the relative character of crêpe and sheet rubber. Latex diluted with water to a 15 per cent concentration of rubber gives a more slowly vulcanizing rubber than the undiluted latex; dilution with serum naturally does not have this retarding effect.—O. deVries and W. Spoon, *Communications Central Rubber Station*, Buitenzorg, 1923, No. 35. 40 pages.

Studies on Hevea Latex—II. Some Constituents of Latex. In latex there appears to be nitrogen in the form of protein bodies, lower diffusible products thereof and lecithin-like bodies.

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[1]Read at a joint meeting of the Manchester Section of the Society of Chemical Industry and the Manchester Section of the Institution of Rubber Industry, December 7, 1922.

Investigation suggests the proteins in latex are not of the usual type.—W. N. C. Belgrave and R. O. Bishop. *The Malayan Agricultural Journal,* December, 1923, 271-279. Tables.

Mercaptobenzothiazole, Its Homologs and Derivatives. Method of obtaining mercaptobenzothiazole and its derivatives used as vulcanization accelerators.—L. B. Sebrell and C. E. Boord. *Journal of the American Chemical Society,* 1923, 45, 2390-2399.

Technology and Commercial Applications of Sulphur—II. Reviews the published investigations of Skellon on the migration of sulphur during vulcanization and the mass action of sulphur in vulcanization. Reference is made to several forms of hard rubber, rubber substitutes, etc., containing sulphur. The insoluble amorphous form and the soluble form probably do not differ seriously in vulcanizing effect.

Several sulphur containing plastics for molded articles are described.—Henry H. Wilkinson. *Chemical Age,* February, 1924, 60-62.

The Use of Rubber Latex in the Manufacture of Boards, Leather and Linoleum Substitutes and the Vulcanization of These Products. A lecture delivered before the Institution of the Rubber Industry, February 4, 1924.—Frederick Kaye. *The India Rubber Journal,* February 9, 1924, 19-24.

New Evidence as to the Existence and Nature of Calender Grain. W. M. Ames, *The India-Rubber Journal,* March 1, 1924, 12.

Coagulation of Hevea Latex with Organic Base. (Italian.) The author finds that numerous basic aromatic or cyclic substances as aniline, x-phenylbiguanide, piridine, etc., are powerful coagulants of the latex. Piperidine is less effective and methylamine, ethylamine and urotropine are inactive. The coagulating power of the former substances is held to be due to their action on the proteins formed by the emulsion agent of the latex.—Camillo Pelizzola. *Giornale di Chimica Industriale ed Applicata,* Milan, January, 1924, 10-11.

Lining and Coating Bodies with Hard Rubber—I. (German.) Description of the processes used in covering metal articles like handles, stoppers, knobs, balls with a hard rubber.—Ludwig Füllsack. *Gummi-Zeitung,* Berlin, February 1, 1924, 271-272.

Lining and Coating Bodies with Hard Rubber—II. (German.) Covering and lining containers and centrifuges with hard rubber is explained in detail.—Ludwig Füllsack, *Gummi-Zeitung,* Berlin, February 15, 1924, 309-310.

Results of the Kediri Rubber Inquiry. (Dutch.) Over 80 samples of rubber, chiefly sheet, submitted by 24 estates in Kediri, Java, were examined as to their external and inner qualities, with a view to increasing the uniformity of the product of this district.—Dr. A. J. Altic, *Archief voor de Rubbercultuur in Nederlandsch-Indië,* January, 1924, 1-13, tables.

Experimental Tapping of Hevea Buddings. (Dutch.) Detailed report of the results obtained in tapping budded trees. The findings lead to conclusions that planting with budded stock is to be considered a temporary measure that must give way to generative propagation as soon as it is possible to get seeds of hereditary good strain. In the meantime, cautious planting with buddings is recommended.—Dr. C. Heuser, *Archief voor de Rubbercultuur in Nederlandsch-Indië,* January, 1924, 25-68. Illustration, diagrams, tables.

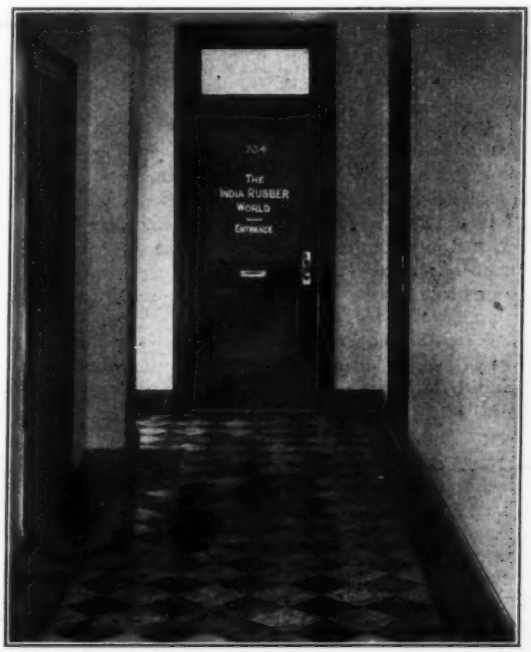
Studies on Hevea Latex—I. Coagulation. Current theories of coagulations are referred to and the writer explains his own theory, namely: Coagulation is normally due to increase of hydrogen ion concentration which may be caused by bacterial action; the phenomena can be explained by the assumption of an iso-electric region for the protective protein. Certain difficulties are also discussed and deductions of practical interest made.—W. N. C. Belgrave. *The Malayan Agricultural Journal,* December, 1923, 348-370, tables, references.

Detection and Distribution of Phytosterols in Latex. Euphorbon has been obtained not only from the *Euphorbiaceae,* but also from many other latex-forming plants and its nature as a phytosterol established. The presence of 0.1-2.0 per cent of phytosterol in latex is regarded as characteristic. The physiological significance of phytosterols is discussed.—G. Klein and K. Pirschle. *Biochemische Zeitschrift,* 1923, 143, 457-472.

Reinforced Rubber Flooring

In much traveled hallways, banks, corridors of office buildings, places of amusement, and in hospitals, where durability in wear and noiselessness are important factors, rubber flooring is rapidly demonstrating its superiority over other kinds of floor covering.

It is reported on good authority that over one million square feet of reinforced rubber flooring has been laid in New York by one manufacturer during the past three years. The standard thicknesses of this flooring are 3/16 and ¼ inch. The composition is



Stedman Products Co.

India Rubber World Office Hallway Laid With Rubber Flooring

a tough wearing stock consisting of selected crude and reclaimed rubbers, fillers and pigments, reinforced with long staple cotton fiber. Properly mixed and calendered this stock is thoroughly consolidated and cured under heavy hydraulic pressure in any lengths required, from which strips and squares are cut to meet any flooring problem. Reinforced flooring has withstood twelve years of wear under severe conditions of service.

Before laying this flooring the underlying floor must be made level, smooth, and free from cracks and irregularities. Laying the flooring begins with cutting and fitting border strips along the edges of the area so that the tiling field will fit between borders without cutting individual square tiles except on their diagonals.

A special tile-laying cement is used on either wood or cement floors and contains shellac as its principal ingredient, with other materials to prevent loosening of the attachment by moisture or chemical influences emanating from underlying structural cement. This cement is smooth and paste-like in consistency and is applied to the floor by plastering trowel and spread to a thin uniform coating.

Upon the fresh cement the cut border strips are laid and adjusted to place around the walls. Next the "field" flooring is cemented in small areas and the rectangular tiles are fitted and pushed into place. Sliding the tiles together forces a slight amount of cement upward between joints, excludes water when the surface is washed and binds the job together.

The firmness of reinforced flooring, its perfect fit as laid and the grip of the cement used for its attachment to the underlying surface are the factors which make a permanent job that will not spread, buckle or loosen from its foundation.

Well laid reinforced rubber flooring may be walked upon immediately without damage, so firmly are the tiles attached together. The cement hardens considerably in 48 hours but does not become fully hard in less than a week.

Recently about 6,000 square feet of reinforced rubber flooring were laid in the hallways of the Central Building, 25 West Forty-fifth street, New York City.

The illustration shows the appearance of this flooring as laid in the hallway of The India Rubber World's office in this building.

The Rubber Bill of the Automobile

By Benjamin Benton

Even those familiar with the general requirements of the automobile industry and who appreciate the importance of the rôle played by rubber as an automobile essential, have but a vague idea of the actual amount and the monetary value of the rubber used in dozens of ways to add to the general efficiency of the up-to-date motor car. Yet a simple survey shows that the annual rubber bill of the automobile now reaches a magnitude even equaling the gross annual sales of the great steel industry in the very recent past. For 1923 alone it amounted to the colossal sum of $1,163,000,000; and for 1924 it can scarcely fail to soar considerably higher.

According to the report of the United States Department of Commerce the total production of automobiles of all kinds for 1923 was 4,012,847. For original equipment of those motor vehicles, for spares and replacements there was produced during 1923 a total of 45,000,000 solid and pneumatic tires having a wholesale value of $760,000,000, or approximately $17 apiece. Adding an average retail profit of 20 per cent, the ultimate sales total would reach $912,000,000.

It is estimated that fully 50,000,000 inner tubes were made in 1923. Computing their average retail value at $3.50, the final sales total for tubes would reach $175,000,000.

Rubber cloth tops or covers were used on about half of the motor cars made in 1923, and the material, averaging $8 a car, cost fully $16,000,000.

A large item of cost in automobile equipment, too, is that of hard rubber storage battery jars, each battery having at least three or four cells, and which expenditure, reckoned on an average of $3 a car, easily totals $12,500,000.

Rubber insulated wire used in the starting, ignition, and lighting systems, figured at about $2 a car, meant an outlay of $8,000,000.

For new or replaced rubber matting on 1923 cars, at $2 a car, there was expended fully $8,000,000.

The radiator hose, with a minimum cost of $1.50 a car, would invoice some $6,000,000.

Flaps and reliners for about half of the cars made last year meant an expense of fully $4,500,000.

Fan belts of rubber or rubberized fabric for over 4,000,000 cars of high and low degree meant a charge of at least $4,500,000.

There are some 20,000 tire repair shops in the country and each used on an average $225 worth of tread, tube, cushion, camelback, combination, breaker gum and rebuilding fabric, air bags, and vulcanizing cement that involved an expenditure of at least $4,500,000.

Weather strips are small items on a car, but even at 50 cents a vehicle they meant an outlay of about $2,000,000.

In addition to the foregoing there are many rubber accessories for automobiles, such as step and heel plates, pedal pads, door bumpers, spring clips, blowout shoes, emergency patching materials, etc. Lumped together and put at an average cost of $2.50 a car their cost would readily reach a total of $10,000,000.

An Impressive Total

A summary of the items of the 1923 rubber bill of the automobile would therefore give a total that may even surprise the well informed.

Casings and solid tires	$912,000,000
Inner tubes	175,000,000
Rubber cloth covering	16,000,000
Hard rubber battery cells	12,500,000
Rubber insulated wiring	8,000,000
Rubber matting	8,000,000
Radiator hose	6,000,000
Flaps and reliners	4,500,000
Fan belts	4,500,000
Tire repairing and rebuilding stock	4,500,000
Weather strips	2,000,000
Miscellaneous rubber accessories	10,000,000
Grand total	$1,161,000,000

Ford Rubber Consumption Large

Of the 4,012,847 motor vehicles produced in 1923, according to the government figures, almost one-half of the total, or, to be precise, 1,915,485, came from the Ford shops. Exact data concerning the cost of the rubber goods used for original equipment of Ford cars is not available, but estimates place the value of the rubber articles used for new Ford machines and for additions and replacements, during 1923, at about 35 per cent of the total already given, thus making the year's rubber bill of the so-called "flivvers" approximately $407,000,000.

Automobile Rubber for 1924

To supply the needs of the 15,000,000 cars now in use, which require an average replacement of 2.7 tires a car, allowing five tires apiece for the 3,500,000 cars scheduled for production this year, and including 1,000,000 tires for export, the rubber industry of America will have to produce some 59,000,000 casings and about 60,000,000 tubes. There will, barring unforeseen adverse circumstances, be a correspondingly increased demand for all the other rubber goods enumerated in the foregoing schedule. Then, too, the average cost of materials throughout the present year is likely to be much above that of last year. All of which indicates that high as was the rubber bill of the automobile in 1923, the rubber bill of the motor car for 1924 is destined to reach a still greater total, probably not less than $1,300,000,000.

ARROW BLACK

Arrow black is made from Louisiana natural gas. The material is specially classified and refined to produce the proper characteristics for a rubber pigment. There is tendency in some gas blacks to produce a lack of resiliency or inter-molecular friction in finished rubber, which seriously impairs the durability of the rubber under service conditions. The final processing of Arrow black is said to overcome this drawback and effect a positive safeguard against the presence of grit in the finished product. The refined uncompressed black is then packed in paper bags with a slip-over bag for protection against breakage, or it may be compressed to any desired degree before shipment.

Replete with information for rubber manufacturers—H. C. Pearson's "Crude Rubber and Compounding Ingredients."

New Goods and Specialties

A New Type of Speed Wagon

The manufacturers claim that the "Cyc-um" is the speediest and most attractive and dependable scooter on the market. The illustration shows Harold Lloyd and his wife starting out on an 18-mile trip to test this statement. The principal features are the sensitive steering device and dependable brake which make possible extremely sharp turns and short stops. A highly developed driving mechanism requires only slight energy to set it in motion and send it speeding along. It is operated with either foot and either from the attached trailer, as in the picture, or from the standing position on the "Cyc-um" itself. One-inch rubber tires on either steel disk or wire wheels are provided, and the handle bars have corrugated rubber grips. There are two styles and three sizes, to accommodate all ages, from eight years up.—The E. J. Hibner Manufacturing Co., 130 West 42nd street, New York, N. Y.

The "Cyc-um" and Trailer

Rubber-Faced Tube Blocks

Charles Meuth, of 22 East North street, Danville, Illinois, is making a set of "Ideal" tube blocks in 5 sizes: 1½ by 3 inches for close quarters around the stem and small tubes; 2 by 3 inches for punctures; 5 by 2½ inches and 7 by 2½ inches for blow-out repairs, and 3 by 8 inches for large blow-outs. The block consists of specially prepared wood to which the rubber is vulcanized by a special process. The face rubber is cemented to the base rubber and can be removed when worn, and replaced. It is claimed that the 2 by 3-inch blocks will last about 3 months in a busy shop without changing the rubber, while the other sizes will last a year or more.

New Heavy Duty Cord Tire

Low Pressure Heavy Duty Cord

"A high class tire built for the man who wants the best" is the description which the manufacturers give of the new heavy duty cord illustrated. These tires, which are 30 by 3½, have been thoroughly tried out and production on a commercial basis will begin soon. The sidewall protection is an exclusive feature, the sidewall being cut up into blocks to absorb road shocks. Another special feature is the low air pressure required. —Trump Brothers Rubber Co., 1857 East Market street, Akron.

Woven Elastic in Continuous Strips

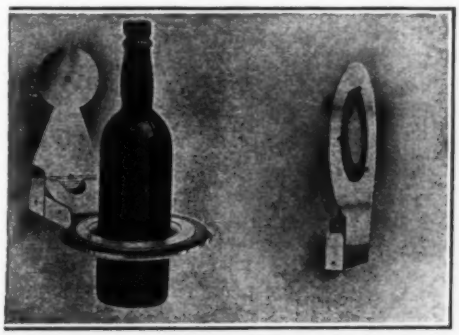
In order to avoid the losses which accrue to retailers through remnants and short lengths of elastic, the manufacturers of Laurel Mercerized Lisle woven elastic are now marketing their product in continuous pieces of 12 yards each. This makes it possible for a purchaser to get a desired length in one piece, without cuts. The finest quality of yarn and extra heavy rubber are said to be employed in this product.—The Russell Manufacturing Co., Middletown, Connecticut.

12-Yard Strips of Elastic

Folding Bracket With Rubber Grip for Glasses

Rubber-Rimmed Glass Holder

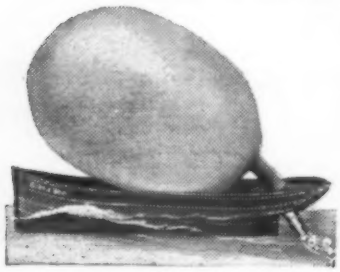
A very simple device with a variety of adaptations is shown in the illustration. It is a folding bracket for glasses, bottles, etc., which has as its special feature an annular rubber ring clamped around its outer edges to the horizontal bracket member, but having the inner edge free, so that when a tumbler is inserted the rubber is depressed and grips it and it cannot be displaced even with the violent motion which might be encountered on seaboard or over rough roads in an automobile. The tumbler or bottle can be placed and held at any desired angle so as to counteract the list of a yacht, for instance. When not in use the bracket folds up against the panel of the



Showing Bracket Holding Bottle and Folded

wall. The internal and external diameters of the rubber ring are 1¾ and 3 inches respectively, will hold any size tumbler, and is finished in brass, nickel plate, or oxidized metal.—Burton's Patents, Ltd., 82 High street, Bromley, Kent.

Balloon-Driven Bathtub Toy



The Bubble Boat

A small item which five-and-ten-cent stores will probably find to be a popular all-year seller is a bathtub toy in the form of a bubble boat, which employs a good quality of balloon as motive power. The air from the balloon bubbles up from the stern with a noise like the exhaust from a motor boat and drives it several feet. The hull of the boat is of metal lithographed in red and yellow planking lines.—Reeves Manufacturing Co., Milford, Connecticut.

Crêpe Sole Canvas Sport Shoe

The popularity of crêpe soles on leather sport shoes was certain to be followed in canvas sport shoes. The "Crêpe-Tred" shoe here pictured is successfully built with a cut crêpe sole thoroughly well attached. It will grip the smoothest surface tenaciously and is ideal for general outdoor wear. The top is of 14-ounce army duck substantially trimmed and stayed. Shoe and sole are reinforced with double foxing. The improved cut of the front of the upper insures comfort and fit. The Crêpe-Tred is one in a line of a dozen distinctive styles of practical duck rubber soled sport and summer shoes to which good wearing quality has been added to distinctive style and fit by one of the foremost designers in the rubber shoe industry.—The Servus Rubber Co., Rock Island, Illinois.

Servus "Crêpe Tred" Canvas Shoe

Anti-Rattler With Vacuum Tip

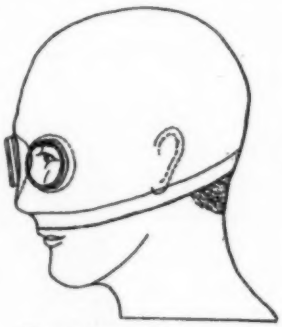
Rubber Suction Tip Anti-Rattler

The rubber vacuum suction tip and the design of the anti-rattler illustrated are special patented features. These anti-rattlers are made entirely of cast brass, so that there is no danger of their threads locking or stripping, and they have a knurled lock ring which prevents the rubber from working away from the glass. An interesting discount sheet is furnished to dealers by the manufacturers.—Attwood Brass Works, Grand Rapids, Michigan.

The Cincinnati Rubber Manufacturing Co., Cincinnati, Ohio, is featuring a special red sheet packing under the trade name "Norka," which, it claims, will wear better and last longer than ordinary packing and will not harden or crack, burn, break, or blow-out. It is sold in standard 200-pound rolls.

Bathing Cap With Goggles

One of the most novel swimming devices for the coming season adapts the idea of the professional diver's goggles to the ordinary bathing cap. As shown in the illustration the cap comprises a rubber skull cap into which the glass goggles are set in a metal frame clamped firmly in place by a rubber band. Another rubber band acts as cushioning for the skull cap, and a reinforcing band which fits around the face and head over that portion of the face which is free from concavities, effectually excludes water from nose, eyes and ears, but leaving the wearer's mouth free for breathing and talking. The normal length of the water-sealing reinforcing band is only slightly less than the largest horizontal circumference of the face, so that little stretching is required in placing or removing the cap.—A. G. Johnson, inventor, Cardenas, North Carolina.



The Johnson Diving Cap

Balloon Tire Clearance Gage

The Dunlop Tire & Rubber Co., Buffalo, N. Y., has devised a gage whereby the dealer can tell in a minute the size of balloon tire required to fit any rim in use. The balloon sizes to fit present rims together with the tire sizes they replace are plainly printed on the gage so that the dealer has the whole story before him. By placing this gage on the hub cap at the balloon tire size recommended to replace the size on the car, and swinging one end of it to the point of least clearance on the fender the right size of balloon can be ascertained.

Perforated Sheet Rubber Stocking

A recent invention employs thin elastic sheet rubber having small, closely spaced perforations for ventilation, from which elastic stockings, knee caps, bandages, etc., are formed, either by molding, casting or dipping. The stocking may be made from two flat perforated sheets, also, and have strengthening strips at the heel. If made long enough to cover the knee, apertures may be provided over and back of the knee for comfort and freedom of movement. A separate ring made of rubber or similar material is provided which rolls upon itself to facilitate putting on the stocking or bandage, and for removing and storing it. The diameter of the stocking is at least 15 per cent smaller when unstretched than that of the limb.—J. C. Lyness, 33 Park Terrace, Queen's Park, Glasgow, Scotland.

Stocking of Molded Sheet Rubber

A luminous golf ball which makes it possible to play as good a game at night as in the daylight has been introduced by Dr. E. A. Davis, Mineral Wells, San Antonio, Texas. The balls are visible in inky blackness, it is said, and are comparatively easy to find even in the rough.

Adjustable Pedal Pad

Universal Extension Pedal Pad

The best quality of rubber is employed in the pedal pad illustrated and it is so corrugated that it is almost impossible for the foot to slip off. The main feature, however, is its adjustability in two ways. The driver with long legs can push it from him, screw it down to its lowest height, and stretch out comfortably. On the other hand, it can be drawn in closer to the seat to accommodate shorter legs, and can be raised as many notches as required. The pads are made to suit any make of car, from the flivver to the limousine. The frame is of cold rolled steel, nickel plated.—Auto Pedal Pad Co., 318-320 West 52nd street, New York, N. Y.

Stringless Rubber Apron

The beauty parlor and hairdressing trade will be specially interested in the rubber apron illustrated, as it was designed with such trade in mind, but its quick "on and off" feature makes it quite as well favored for the kitchen and nursery. Two light wire springs, one at the neck and one at the waistline, take the place of strings and straps. These merely curve into place and stay there until with a single quick motion the apron is removed. A sponging with cold water and soap is all that is necessary for cleansing the material.

Two-Spring Rubber Apron

The stringless idea is carried out in a shampoo bib, also, and in aprons of other designs for household and business use.—Poole's Stringless Specialties, 351 West 25th street, New York, N. Y.

Double Tube Air Bag

The "Superior" air bag recently marketed is said to be the only air bag having an inner tube. The bag is made of a long staple cotton impregnated with a slow-curing gum that keeps it soft and flexible. At each end of the bag is a groove which forms the lock to hold the metal end caps. The inner tube through which the bag is inflated is made of a slow and long-curing gum which, it is claimed, will withstand intense heat and pressure. A fabric and rubber valve air stem is provided which can be used on any size bag.—Superior Air Bag Co., 804 West 54th street, Los Angeles, California.

THE BIG BASEBALL LEAGUES ARE DISCOVERING A USE FOR RUBBER in the great game. Rubber bases, which resemble huge bath sponges, are taking the place of the orthodox sawdust-filled canvas bags on the training diamond of the Chicago Cubs at Catalina Island, California.

An Improvement to the Tuxedo Vacuum Cup Tire

The Tuxedo Vacuum Cup Tire has added to its rugged tread an attractive feature designed to protect the sidewall from rut cuts and curb wear. This addition is not merely an ornament on the side of the tire but consists of a big heavy rib of brawny rubber scientifically placed to absorb the devastating bumps of curb or rut. The curb guard effectively removes the possibility of the sidewall weakening prematurely because of its excessive rubbing, grinding and chafing against ruts or curbs. It protrudes from the sidewall at the point where the tire is widest, acting as a protective buffer between the curbstone and the casing. The safety feature of the vacuum cup tread is retained in Tuxedo Vacuum Cup tires, the tread being greatly reinforced by sturdy rubber bridges connecting the massive cups, thus assuring additional service. Tuxedo vacuum cup tires are made in oversize cord type only; they do not displace the regular vacuum cup tires, which remain the backbone of the Pennsylvania line.—Pennsylvania Rubber Co. of America, Inc., Jeannette, Pennsylvania.

Note the Heavy Rib on Sidewall

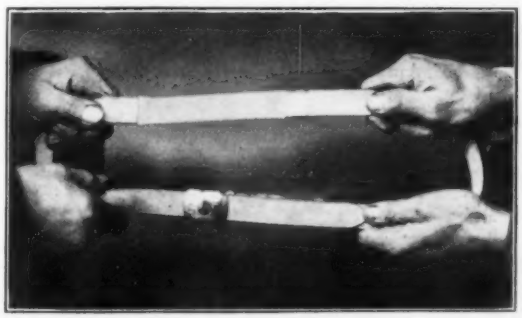
One of Kleinert's Newest Designs in Brassierettes

The present vogue of the sleeveless dress has brought into popular favor the brassierette which is independent of the dress for its fastening and yet affords perfect protection. The design illustrated is the convenient "slip-on" style, with square extension shields, elastic straps around the arm, and shirred elastic across the back. The shape of the shield is the special feature.—I. B. Kleinert Rubber Co., 485 Fifth avenue, New York, N. Y.

Brassierette With Square Extension Shields

Belt with Rubber Section

An amplification of the "belt that stretches" is made of strong fabric or leather so that its holding and long wearing powers are assured. Six inches of pure rubber inserted at the back provide for an amount of "give" which insures comfort under any circumstances while affording a snug fit at all times. The ends of the fabric and rubber are vulcanized together, and when the belt is made of leather an additional cementing and stitching make separation of the ends practically impossible.—George Langgons, 323 Lewis avenue, Brooklyn, New York.



Fabric and Rubber Belt

The Obituary Record

A Pioneer Rubber Reclaimer

Rudolph A. Low (formerly Loewenthal), well known as one of the pioneers of the American rubber reclaiming industry, died in Paris, France, on March 18.

Mr. Low was born in Mecklenburg-Schwerin, Germany, in 1853, his family settling in the United States in 1865. For nearly half a century, beginning in 1872, he was identified with the rubber trade. He was the holder of several valuable patents relating to reclaimed rubber, and was recognized as an authority on rubber affairs in general.

Rudolph A. Low

His first connection was with Charles Loewenthal & Co., the New York house of Heilbut, Symons & Co., of London, England. In 1880 or 1881 he erected a reclaiming plant at Cresskill, New Jersey, with a capacity of 1½ tons per day. In 1882 the firm of Loewenthal & Morganstern was organized, with a factory in Jersey City having a capacity of 10 tons per day, this firm being incorporated in 1884.

This business continued successfully until in 1890 or 1891 there came the so-called reclaiming trust—The Rubber Reclaiming Co.—of which Mr. Low was treasurer, and to which his plant was leased. In 1895 this company was dissolved and Mr. Low leased his plant to the New Jersey Car Spring & Rubber Co. and temporarily abandoned the reclaiming business.

Meanwhile he was elected president and general manager of the Manhattan Fire Insurance Co., Fire Association and Armstrong Fire Insurance Co. He established an agency system for these companies all over the United States, became a member of the New York Board of Fire Underwriters, and for five years conducted the affairs of these companies with great success.

In 1899 the reclaiming plant reverted to him, and, selling out his insurance business, he again engaged in rubber reclaiming under the firm name of the Loewenthal Rubber Co. The following year he amalgamated his interests with those of the United States Rubber Reclaiming Co., of which he was treasurer and a director, and later vice-president.

The subsequent history of this company has been one of continuous success, its growth being reflected in the closing of the original plant at Shelton, Connecticut, and the erection in 1902 at Buffalo, New York, of the largest reclaiming plant in the world, operated by power from Niagara Falls. This plant was substantially enlarged in 1911.

Mr. Low retired from the United States Rubber Reclaiming Co. in 1921 and has since lived abroad. He is survived by three brothers, B. Loewenthal, Julius Loewenthal and Richard Loewenthal. His wife and only son, Clarence H. Low, were with him in Paris at the time of his death.

"Crude Rubber and Compounding Ingredients" should be in the library of every progressive rubber man.

Gas Masks for Fire Fighters

It is well known that during the war American research and skill did much in the way of perfecting the gas mask to be used by our soldiers in combating smoke and poisonous fumes. In the issue of The India Rubber World, March 1, 1919, was described in detail the development of the gas mask industry, as well as the improvements made through the Bureau of Mines, to be finally perfected in the laboratories of The B. F. Goodrich Co and The Goodyear Tire & Rubber Co., Akron, Ohio.

In consequence of these pioneer efforts the Bureau of Mines established, at the war's termination, an experimental station at Pittsburgh, Pennsylvania, where careful investigations have resulted in the production of practicable apparatus for fighting poisonous gases resulting from fires and explosions.[1]

The chief organic vapors that firemen may meet are those of benzene, carbon disulphide, carbon tetrachloride, formaldehyde, turpentine, and solvent naphthas. These liquids are largely used in the manufacture of rubber, explosives, dyes, paints, varnishes, and chemicals. Like the vapor of gasoline, organic vapors are generally inflammable, and when mixed with air may cause violent explosions.

Other organic vapors than those mentioned are acetone, alcohols, aniline, chloroform, ether, and toluene. The Army gas mask affords protection against these. Those fighting fires in chemical plants or warehouses where such materials may be stored will also find the gas mask a protection against all ordinary concentrations of acid fumes. Until recently, however, no apparatus had been perfected which would guard against the effects of carbon monoxide, an extremely poisonous gas, which is said by an authority to be responsible for more deaths in civil life than all other gases combined.

A new type of equipment, very recently perfected, has many of the features of the Army gas mask, but with certain improvements. It will be noted that this mask may be used with two different kinds of canisters, one of these being a special carbon monoxide type to protect the wearer from carbon monoxide gas, and the other an all-service equipment to be used as a safeguard against organic vapors, acid gases, ammonia, and smoke, or combinations of these.

Carbon Monoxide Mask

Still further suggestions to fire departments wishing to cooperate in obtaining information on the presence of carbon monoxide in gases from fires will be furnished by the Pittsburgh Experiment Station of the Bureau of Mines, while gas masks submitted by manufacturers for approval will be tested to determine whether they fulfill certain requirements.

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[1] "Gas Masks for Gases Met in Fighting Fires." Technical Paper No. 248. Department of the Interior, Bureau of Mines, Washington, D. C.

"Pneumatic Tires," by Henry C. Pearson—This authoritative, comprehensive work fills a long felt want in the tire industry. It is written for tire manufacturers, dealers and repairmen.

Annual Report of the United States Rubber Co.

The thirty-second annual report of the United States Rubber Co., for the year ended December 31, 1923, shows the largest total of gross sales since 1920, when the company's sales peak was reached, but reflects the generally unsatisfactory condition of the tire branch of the rubber industry last year. Net income for the year, after allowing for the regular preferred stock dividends, left earnings equivalent to $2.28 a share on the common stock outstanding, as compared with $2.68 a share for the year 1922.

The Chairman's Report

The chairman's report follows in part and to it is appended the consolidated general balance sheet.

Operations for the Year 1923

Sales for the year amounted to $186,261,381, an increase of $17,475,031, or 10.35 per cent compared with 1922. All of this increase was in sales of commodities other than tires. Excluding tires, which at selling prices prevailing during the year constituted substantially less than one-third of the total sales, the increase in dollar volume of sales was approximately 20 per cent.

Net profits from operations amounted to $12,161,055. With the exception of tire and export business, sales of all other commodities, representing approximately two-thirds of the total sales, produced a satisfactory net operating profit.

The company more than maintained its position in the tire trade as to unit sales, but the results were unsatisfactory owing to general conditions in the industry. Because of adjustments made during the year, selling prices of tires reached the lowest level ever known. This was especially true in sales to automobile manufacturers. Since the close of the year it has been possible to obtain higher prices from automobile manufacturers, and cost of distribution has been reduced by consolidations of sales branches and other changes. In view of these changes, and what seems to be a more stable condition in the tire industry, it is hoped that results from sales of tires during 1924 will show substantial improvement.

Interest on funded indebtedness amounted to $4,768,398, leaving net income of $7,392,657, after all interest and other charges.

Dividends on the preferred stock amounted to $5,538,718, leaving surplus for the year of $1,853,939. The consolidated surplus as of December 31, 1923, amounted to $32,584,590.

Current assets as of December 31, 1923, amounted to $125,135,981, and current liabilities amounted to $50,438,476.

Inventories and Contractual Liabilities

Inventories of finished goods were taken at cost of production, which represents sound values with the possible exception of goods at foreign branches, as to which there is some uncertainty, due principally to the fact that the real value of the goods depends on the sale thereof and the prices obtainable in highly competitive foreign markets.

Inventories of raw materials and supplies were taken at cost prices, which were at or below market prices.

Contractual liabilities as of December 31, 1923, representing forward commitments for raw materials and supplies, amounted to approximately $10,000,000. All commitments were at or below current market prices, and as to quantities covered future requirements for conservative periods.

The company retired $956,000 of funded indebtedness during the year, through the operation of the sinking funds, being $772,000 of 5 per cent bonds and $184,000 of 7½ per cent notes.

Development of Rubber Plantations

The development of rubber plantations owned by the company in Sumatra and on the Malayan Peninsula has progressed satisfactorily. Those in Sumatra comprise a total of 88,659 acres, of which 50,545 acres have been planted and 43,627 acres of the planted areas are in production. Those on the Malayan Peninsula comprise 22,484 acres, of which 11,078 acres have been planted, with 2,030 acres in bearing.

The rubber produced on these plantations is taken over by the United States Rubber Co. at current market prices, and enters into its manufacturing costs at these prices. On this basis the plantations produced a profit for the year, after providing conservative reserves for depreciation of plant and equipment and amortization of the cost of the properties. No part of the profits or of the accumulated surplus of the plantation companies has been included in the consolidated results of the United States Rubber Co.

The company closed the year in a strong financial condition, as indicated by the balance sheet, and as to inventories of finished goods and raw materials, including forward commitments, is in a favorable position.

C. B. Seger, Chairman.

Consolidated General Balance Sheet—December 31, 1923

United States Rubber Co. and Subsidiary Companies

Assets

Cash	$11,654,598.13	
Accounts and notes receivable from customers	43,910,426.05	
Accounts, notes and loans receivable, others	2,010,978.44	
Finished goods	42,479,618.82	
Materials and supplies, including goods in process	25,080,359.78	
Total current assets		125,135,981.22
Notes receivable of employees given for purchase of common stock and secured by such stock	6,724,439.17	
Common stock of U. S. R. Co. held under service contracts and agreements	2,081,086.49	
Securities owned, including common stock of U. S. R. Co. held by a subsidiary company	6,673,677.94	
Plants, properties, and investments including rubber plantations, less reserve for depreciation	181,513,509.52	
Prepaid and deferred assets	4,243,218.85	201,235,931.97
Total assets		$326,371,913.19

Liabilities, Reserves and Capital

Bank loans	$38,235,000.00	
Accounts payable, including acceptances payable for importation of crude rubber	12,203,475.91	
Total current liabilities		50,438,475.91
Funded indebtedness		85,025,800.00
Total liabilities		135,464,275.91
Reserves for insurance	2,257,535.89	
General reserves	1,592,635.82	
Reserve for dividend on preferred stock, payable January 31, 1924	1,380,000.00	
Total reserves		5,230,171.71
Capital stock—preferred 69,000,000.00 less amount held by a subsidiary company 3,890,000.00	65,110,000.00	
Capital stock—common	81,000,000.00	
Minority—Canadian Consolidated Rubber Co., Limited, stock	273,600.00	
Total capital stock	146,383,600.00	
Fixed surpluses—subsidiary companies	6,709,275.22	
Surplus (subject to final determination of Federal taxes for years subsequent to 1917)	32,584,590.35	
Total capital stock and surpluses		185,677,465.57
Total liabilities, reserves and capital		$326,371,913.19

The company had a contingent liability of $2,800,000 as endorser of a note of the Beacon Falls Rubber Shoe Co., which company is operated by the United States Rubber Co., under a management agreement entered into July 27, 1921.

Statement of Funded Indebtedness

First and refunding mortgage 5 per cent gold bonds, Series A, due 1947—issued	$69,000,000.00	
Less amount retired through sinking fund	4,010,200.00	
	64,989,800.00	
Less amount held in treasury	2,000,000.00	62,989,800.00
Ten year 7½ per cent secured gold notes, due August 1, 1930 (security as stated below)	$20,000,000.00	
Less amount retired in connection with sinking fund operations	564,000.00	19,436,000.00
Canadian Consolidated Rubber Co., Limited, 6 per cent gold bonds, due 1946		2,600,000.00
Total funded indebtedness outstanding, as per balance sheet		$85,025,800.00
Treasury bonds deposited as security for ten year 7½ per cent secured gold notes as stated above:		
First and refunding mortgage 6 per cent gold bonds, Series B, due 1947	$24,295,000.00	

Statement of Surplus Account

Surplus December 31, 1922		$32,097,821.35
Net profits from operations for the year 1923	$12,161,055.05	
Interest on funded indebtedness	4,768,398.28	
Net income for the year, after all interest and other charges	7,392,656.77	
Dividends on the preferred stock, including accrual of dividend payable January 31, 1924	5,520,000.00	
Dividends on minority stock of Canadian Consolidated Rubber Co., Limited	18,718.00	5,538,718.00
Surplus for the year		1,853,938.77
		33,951,760.12
Sundry charges, less credits, to surplus, in adjustment of transactions of prior periods		1,367,169.77
Surplus December 31, 1923, as per balance sheet		$32,584,590.35

New Incorporations

Borough Auto & Supply Co., Inc., February 5 (New Jersey), $50,000. Frederick Gowan, president, 250 Grant avenue, Highland Park; William E. Shomo, vice president, 125 Nelson street, New Brunswick; Robert C. Smith, secretary and treasurer, 45 Cleveland avenue, Highland Park, all of New Jersey. Principal office, 300 Raritan avenue, Highland Park, New Jersey. To carry on a general automobile business.

Clover Tire Mfg. Co., February 18 (North Carolina), $25,000. H. H. Memory; Vance Skipper; I. L. McGill; all of Lumberton, North Carolina. Principal office, Lumberton, North Carolina. To buy, sell and deal in automobile tires, tubes and accessories and operate an up-to-date vulcanizing and repair shop.

Davis Tire & Rubber Co., January 24 (Utah), $500,000. Edward N. Davis, president and director, Ogden, Utah; Floyd G. Bean, vice president and director, Minneapolis, Minnesota; L. L. Peck, secretary and treasurer and director, Malad, Idaho. The following also are directors: Percy Hansen, Ogden, Utah; Wm. L. Goodsall, J. E. Darmer, both of Salt Lake City, Utah; Loudvic Isaard, R. F. England; and Lucy M. Davis, all of Ogden, Utah. Principal office, Ogden, Utah. To manufacture tires, tubes and other rubber goods.

Dressler's Auto Supply Co., January 17 (New Jersey), 1,000 shares of common stock, no par value. Incorporators: Abraham J. Ginsberg, T. Cyril Butler, and Samuel S. Ferster, all of 800 Broad street, Newark, N. J. Principal office, 800 Broad street, Newark, New Jersey. To sell tires, batteries and accessories for motor cars and vehicles.

Economy Tire Co., February 25 (Delaware), 5,000 shares of common stock without nominal or par value, and 10,000 shares of preferred stock, par value $10. Incorporators: E. E. Craig, A. L. Raughley, and M. F. Vance, all of Dover, Delaware. Principal office, with the United States Corporation, Dover, Delaware. To manufacture and deal in automobile tires, tubes and accessories of all kinds.

Elizabeth Auto Supply Co., Inc., January 31 (New Jersey), $125,000. Abraham Weiner, president; Maxwell W. Weiner, secretary, both of 156 Fifth street; Morris A. Traubman, treasurer, 1115 Washington street, all of Elizabeth, New Jersey. Principal office, 231 Market street, Newark, New Jersey. To sell tires and accessories for automobiles.

Garfield Auto & Equipment Co., Inc., February 19 (New Jersey), $25,000. Incorporators: Cornelius Baker, 36 Troast Court, Clifton; James Donohue, 18 Grand street, and Harry L. Goetschius, 3 Passaic street, both of Garfield, and all of New Jersey. Principal office, 3 Passaic street, Garfield, New Jersey. To sell automobiles, tires and accessories.

Golf Ball Corp., of America, Inc., The, March 14 (Delaware), $150,000. Incorporators: Charles R. Bishop, E. H. Feustel, and R. H. Ocheltree, all of Wilmington, Delaware. Principal office, with The Delaware Charter Co., 900 Market street, Wilmington, Delaware. To manufacture and deal in golf balls and other articles made of rubber.

Kelley-Hudson-Essex, Inc., January 31 (New Jersey), $100,000. Incorporators: Eric H. Jentz, Lewis G. Hansen, and Herman Lipschitz, all of 586 Newark avenue, Jersey City, New Jersey. Principal office, 586 Newark avenue, Jersey City, New Jersey. To carry on an automobile business and sell tires and tubes.

Lambert Trubleproof Tire Co., Inc., March 4 (Tennessee), $5,000. Incorporators: A. B. Wallace, C. R. Wallace, W. T. Wrenne, J. G. Stephens, and T. T. McCarley. Principal office, 1123 Broad street, Nashville, Tennessee. To manufacture tires.

Moore-Kerr Chevrolet Sales, Inc., February 20 (New Jersey), $50,000 of preferred stock and 500 shares of common stock no par value. Incorporators: Martin J. Moore, 193 Milford avenue, Newark; J. Willard Kerr, 319 Sherman avenue, Glenridge, both of New Jersey; George H. Kerr, The Belvedere Apartments, Wilmington, Delaware; and Martin J. Moore, 1109 Hoe avenue, Bronx, New York. Principal office, 411 North Broad street, Elizabeth, New Jersey. To deal in automobiles, tires and accessories.

New Brunswick-Paige-Jewett Co., February 20 (New Jersey), $100,000. Incorporators, Edwin L. Baier, New Brunswick, New Jersey; Harry F. Beldon, Highland Park, New Jersey, and George Cathers, New Brunswick, New Jersey. Principal office, Highland Park, N. J. To deal in automobiles and accessories.

Overseas Wire Cord Co., The, March 4 (Delaware), 10,000 shares without nominal or par value. Incorporators: T. L. Croteau, M. A. Bruce, and A. M. Hooven, all of Wilmington, Delaware. Principal office, with the Corporation Trust Co. of America, du Pont Building, Wilmington, Delaware. To manufacture and deal in crude and manufactured rubber, gutta percha, cotton, etc.

Reinforced Rubber Co., Inc., February 21 (Delaware), $1,200,000, par value $100. Incorporators: F. R. Hansell, Philadelphia, Pennsylvania; E. M. McFarland, Camden, New Jersey; and J. Vernon Pimm, Philadelphia, Pennsylvania. Principal office, with the Corporation Guarantee & Trust Company, Ford Building, Wilmington, Delaware. To manufacture and deal in rubber and gutta percha.

Rubber Latex Research Corporation, The, February 12 (Massachusetts), $100,000. Incorporators: W. Burton, Westcott, president, Dover; Albert M. Davis, vice president, Wellesley; Charles E. Valentine, treasurer, Newton; John W. Decrow, Wellesley, all of Massachusetts. Principal office, Boston, Massachusetts. To carry on research regarding rubber latex and its compounds.

Rubber Products Sales Co., February 28 (New Jersey), $100,000. Incorporators: Raymond H. Roberts, Little Falls, New Jersey; Virgio Manfra, 402 Main street; Oscar Lucibello, 36 Ward street; and Thomas F. Vigorito, 361 Preakness avenue, all of Paterson, New Jersey. Principal office, 40 Hamilton street, Paterson, New Jersey. To manufacture, buy, sell and deal in rubber and gutta percha and all goods of which rubber and gutta percha are component parts.

The Samson Tire & Rubber Corp., Inc., January 12 (Delaware), $13,000,000. Incorporators: James M. Satterfield, L. B. Phillips, and J. B. Bailey, all of Dover, Delaware. Principal office, 410 West Pico street, Los Angeles, California. To manufacture pneumatic tires and tubes.

Storms Tire & Motor Co., Inc., The, February 25 (North Carolina), $20,000. Incorporators: Burgin Pennell, L. E. Storms, and W. R. Gilmore, all of Asheville, North Carolina. Principal office, Asheville, North Carolina. To manufacture automobiles, tires, parts, etc.

Well Worth Sales Corp., January 8 (New York), $25,000. Incorporators and directors: Benjamin Finkelstein, 4518 Eleventh avenue; Joseph Aronstam, 1517 St. Johns Place; Sally Nemerover, 260 Williams avenue, all of Brooklyn, New York. Principal office, Woolworth Building, New York City. To specialize mainly in fountain pens and pencils.

Wohl Shoe Co., January 1 (Missouri), $200,000, of which $110,000 is paid up. David P. Wohl, president and treasurer; Carlyn H. Wohl, secretary; S. L. Swarts, vice president. Principal office, 1224-26 Washington avenue, St. Louis, Missouri. To manufacture, buy and sell at wholesale and retail, shoes, rubbers and footwear of all kinds.

BALLOON TIRE PRESSURE GAGE

For many years the Schrader company has been making straight and angle-foot gages for testing regular tire pressures. When the first announcement was made regarding the production of balloon tires, Schrader engineers began the development of a gage that would register low pressures in one-pound graduations. The result is the low pressure gage shown herewith. It resembles the regular No. 2789 Schrader angle-foot gage and is fitted with the angle foot which makes possible its use with disk and wire wheels and wheels with thick spokes or large brake drums.—A. Schrader's Son, Inc., Brooklyn, N. Y.

Schrader Balloon Tire Gage

FIFTH FIRESTONE UNIVERSITY SCHOLARSHIP

The fifth university scholarship in connection with the National Good Roads Essay Contest, as offered during five successive years, will as formerly be conducted in 1924 by the Highway Education Board, Willard Building, Washington, D. C. As usual this contest, open to all students of high school grade, was planned and will be financed by Harvey S. Firestone, president of the Firestone Tire & Rubber Co., Akron, Ohio. All essays submitted should deal with the subject, "The Relation of Improved Highways to Home Life." Those desiring further particulars should address the Highway Education Board.

News of the American Rubber Trade

Current Outlook in the Rubber Industry

An element of seasonality is felt in certain branches of the rubber industry, but in general production is at rather better than fair volume. Although prices for rubber goods generally were low during 1923, and still remain so, they produced satisfactory net operating profit.

Selling prices in tires and heels have reached a low level due to price-cutting. Last year, tires reached the lowest price level in their history. However, higher prices are now being realized from automobile manufacturers for new tire equipment. Reliance is placed upon this fact, combined with consolidation in sales organizations and more stable conditions in the tire industry to bring about improvement in tire sales profits for the present year.

Tire production is gaining volume on spring schedules, special activity being noted in preparations for a large output of balloon and balloon type tires for the approaching season.

The best informed opinion regards the situation in general business as hardly better than fair. There exists a strong inclination to regard as unwarranted the delay of tax reduction so generally demanded by the people in all sections of the country. Leaders in commerce, industry, transportation and finance share in the uncertainties thus arising. As illustration, the purchasing of supplies and equipment by railroad companies has been curtailed within recent weeks, based on doubts of the course Federal legislative action may take. Lack of orders for airbrake and signal hose has led to closing down those departments in the rubber industry, where they have been operating for years without a shut-down.

In spite of these facts the American rubber industry is on a sound basis, and its leaders unhampered by excessive overhead and with efficient manufacturing organizations and consolidated sales programs are hopeful of realizing their optimistic forecast.

Financial

The B. F. Goodrich Co.

For the year ended December 31, 1923, The B. F. Goodrich Co. reports net sales of $107,092,730, as against $93,649,710 in 1922. Net profits were $3,025,383 after depreciation and interest, but before Federal taxes for the year, compared with $3,047,769 at the end of 1922, and a loss of $8,983,401 in 1921. While net earnings were disappointing there was a substantial increase in unit sales.

The balance sheet shows total assets and liabilities of $88,273,732, compared with $92,310,760 at the end of the preceding year. Current assets are $46,996,876, and current liabilities $12,719,696. Real estate and plant value is fixed at $31,024,402 after depreciation. Inventories of $24,390,647 at the end of 1923 compare with inventories of $22,811,994 at the close of 1922. Accounts and notes receivable amounted to $19,435,856, and cash of $3,160,499 is represented among the assets. Bills and accounts payable total $11,912,040. Surplus before Federal taxes was $12,332,013. Notes were reduced from $12,500,000 to nil.

Kelly-Springfield Tire Co.

The Kelly-Springfield Tire Co. during the year retired $1,000,000 of its 8 per cent notes and reports that the business outlook for 1924 is encouraging. Gross profits on sales before depreciation is shown at $9,559,804 in the report; net profits from operation, $762,407; other income, $345,130, and total income, $1,107,537. Deduction for interest on the company's ten-year 8 per cent sinking fund gold notes was $770,000, and other deductions, including depreciation, totaled $1,503,821.

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
Boston Woven Hose & Rubber Co.	Com.	$1.50	March 15	March 1
Canadian Consolidated Rubber Co.	Pfd.	1¾% q.	March 31	March 17
Firestone Tire & Rubber Co.....	6% Pfd.	1½% q.	April 15	April 1
General Tire & Rubber Co.....	Pfd.	1¾% q.	April 1	March 20
Goodyear Tire Co. of Canada....	Pfd.	1¾% q.	April 1	March 15
Goodyear Tire & Rubber Co.....Prior Pfd.		2% q.	April 1	March 20
Goodyear Tire & Rubber Co.....	Pfd.	$2 q.	April 1	March 15
Goodyear Tire & Rubber Co. of California	Pfd.	1¾% q.	April 1	March 25
Kelly Springfield Tire Co.....	6% Pfd.	$1.50 q.	April 1	March 17

New York Stock Exchange Quotations

March 24, 1924

	High	Low	Last
Ajax Rubber, com.....	6¾	6⅝	6⅝
Fisk Rubber, com.....	7¾	7¼	7⅜
Fisk Rubber, 1st. pfd.....	53½	53½	53½
Goodrich, B. F., Co., com.....	19⅝	19¼	19⅜
Goodyear Tire & Rubber, pfd.....	44¼	44	44¼
Goodyear Tire & Rubber, pr. pfd. (8).....	90¾	90¾	90¾
Kelly-Springfield Tire, com.....	17⅛	16½	16⅞
Kelly-Springfield Tire, pfd. (6).....	55	54	55
Keystone Tire & Rubber, com.....	2⅛	2⅛	2⅛
United States Rubber, com.....	30½	29⅞	29¾
United States Rubber, 1st pfd. (8).....	80⅝	78½	80

Akron Rubber Stock Quotations

Quotations of March 24 supplied by App-Hillman Co., Akron, Ohio:

	Last Sale	Bid	Asked
American com.	5	...	10
American pfd.	30	...	35
Amazon com.	1¾	1¾	2¼
Firestone com.	70	69	70
Firestone 6% pfd.	93	93½	96
Firestone 7% pfd.	88	87	89
General com.	160	155	165
General 7% pfd.	100	100	101
Goodrich 6½s	98	98	98½
Goodyear com.	10	9⅜	10¼
Goodyear 7% pfd.	44	43	45
Goodyear 1st mtg. 8s	117	116½	117¾
Goodyear deb. 8s	101¾	101½	102
India com.	75	75	...
India 7% pfd.	80	75	82
Mason com.	1½	1¾	1¾
Mason 8 % pfd.	23	23	25
Miller com.	67½	65	67
Miller 8% pfd.	97	96¾	97½
Mohawk com.	6	7	11
Mohawk 7% pfd.	51	50	53
Rubber Products	10	10	...
Seiberling com.	4	4	4¼
Seiberling 8% pfd.	40	40	...
Star com.	9	...	15
Star 8% pfd.	30	...	60

The Rubber Trade in the East and South

Manufactured Goods

Eastern factories generally are fairly well occupied, even those devoted to the manufacture of goods of staple rather than seasonal character, or specialties. The sentiment of rubber men is conservative and sound toward present business problems indicating caution, resourcefulness and preparedness.

Owing to the general mild conditions that prevailed the past winter in the eastern and middle states, dealers' stocks of rubber footwear did not move as actively as usual. In consequence, footwear production is on about half to two-thirds capacity, chiefly tennis and sport shoes rather than heavy goods.

Standard mechanical goods are in fair demand except air brake and signal hose and other railroad specialties. Factories are operating at 85 to 90 per cent of normal tonnage output in most instances. The production of heels is progressing at a good rate. Prices are keenly competitive, with profits well nigh eliminated.

The output of tires is at good seasonal volume, which is building up monthly to the early summer output of last year. Wire and cable plants are well occupied with orders. The production of automobile topping is active in keeping with the well maintained output of automobile manufacturers. Makers of weatherproof clothing are very busy on garments for summer wear and

are pressing proofers for goods. Makers of druggists' sundries, specialties and novelties are well supplied with orders, especially in lines which are seasonal.

Executives of Hodgman Rubber Co.

At the recent annual meeting of the stockholders of the Hodgman Rubber Co., Tuckahoe, New York, the following were elected directors: G. B. Hodgman, J. Schweizer, F. A. Hodgman, S. T. Hodgman, Ernest R. Early, Gayer G. Dominick, Jack A. Roberts, Newton E. Stout, J. de C. Van Etten.

At the organization meeting the following officers were chosen: Jack A. Roberts, president; G. B. Hodgman, chairman of the board; Joseph Schweizer, vice-president and treasurer; Fred T. Roberts, vice-president in charge of developing; S. T. Hodgman, secretary.

The executive offices of the Hodgman company have been recently removed to Tuckahoe, New York, where the factories maintained by the organization are located.

New York

H. H. Replogle, formerly with National Aniline & Chemical Co., Inc., is now head of the intermediates and rubber accelerators department of the Grasselli Chemical Co., 117 Hudson street, New York.

The well-known concern carrying on business under the name of Toch Brothers, and specializing in the manufacture of paints and varnishes for technical and scientific uses, announces the removal of its offices for the fourth time in the seventy-five years of the organization's existence. The new executive and sales offices will be located at 110 East 42nd street, New York, N. Y.

The Spadone Machine Co., Inc., 15 Park Row, New York, N. Y., has been recently appointed exclusive selling agent in the United States and Canada for the Benzine Condensation Co.'s solvent recovery apparatus. It is claimed that this process can be operated without the attention of a skilled chemist, and at a cost slightly less than one-fifth cent to each gallon of solvent recovered. The Spadone company also manufactures the Bolton vertical bias cutter, as well as lining strippers and windup machines.

Edward N. Rosenfeld has joined the sales organization of the Smith Chemical & Color Co., 257-259 Water street, New York, N. Y., dealers in dry colors, pigments and chemical specialties for the rubber trade.

H. B. Olmstead, formerly connected with the National Aniline & Chemical Co., has recently joined the sales department of the Wishnick-Tumpeer Chemical Co., Inc., 130 44th street, Brooklyn, New York. With headquarters at Brooklyn, Mr. Olmstead will cover Canada and the eastern states.

The Endicott Johnson Corporation, Johnson City, New York, maker of leather and leather shoes, will in a few months reach daily production of 15,000 pairs of soles and 100,000 pairs of rubber heels in its own rubber department. J. W. Matthaei is in charge of the rubber division.

J. W. Brown, formerly branch manager at Atlanta, Georgia, for the Empire Tire & Rubber Corp., has been transferred to Albany, New York.

About 900 operatives are now employed at the great plant of the Dunlop Tire & Rubber Co., Buffalo, New York, which consists of fourteen buildings with a floor space of 1,200,000 square feet, while the entire property comprises 215 acres. The plant output now includes 1,100 automobile casings and 150 solid tires a day.

Eastern and Southern Notes

Samuel Lownds & Sons have opened a new plant for the manufacture of elastic and non-elastic fabrics at 40 Union avenue, Bridgeport, Connecticut. Samuel Lownds was formerly connected with the Bridgeport Elastic Web Co., and in 1902 organized the Bridgeport Elastic Fabric Co. With the merging of his concern in 1917 with The Everlastik Co. Mr. Lownds became manager of the consolidated organization, but resigned last June in order to begin his present undertaking.

During the last six weeks production has considerably increased at the plant of the Norwalk Tire & Rubber Co., Norwalk, Connecticut, the output being now estimated at 700 tires and 2,500 tubes a day. D. Spence is general manager.

The Yarnall-Waring Co., Chestnut Hill, Philadelphia, Pennsylvania, announces that Harold S. Webster has recently been appointed district manager for eastern Pennsylvania, southern New Jersey, Delaware, Maryland, District of Columbia, and Virginia. Mr. Webster will make his headquarters in Philadelphia and will handle the Yarway power plant products, as well as other types of special equipment.

W. R. Marsden has recently succeeded L. A. Graybill as fabric technologist at the plant of the Kelly-Springfield Tire Co., Cumberland, Maryland.

W. V. Dickinson has been transferred from the Pensacola, Florida, branch to the Atlanta, Georgia, branch of the Empire Tire & Rubber Corp., Trenton, New Jersey.

The tire fabric plant now being built at Hogansville, Georgia, and known as the Stark Mills, is a subsidiary of the New England Southern Mills. The plant will have 35,000 spindles, and will use 150 bales of cotton a week. Approximately 325 operatives will be employed at the plant in the production of tire fabric.

Three new plants, replacing one that has been abandoned, are being erected in Boone County, West Virginia, by Godfrey L. Cabot, Inc., 940 Old South Building, Boston, Massachusetts. The company specializes in the manufacture of carbon black, maintaining a number of factories and shipping points, while stocks are carried at leading cities in this country as well as abroad.

Additional machinery for the manufacture of tire fabrics is being installed at the Thomaston Cotton Mills, Thomaston, Georgia.

L. L. Heidacher, for eight years connected with the Firestone Tire & Rubber Co., Akron, Ohio, and formerly manager of that company's branch at Memphis, has been recently placed in charge of the Firestone branch at Charlotte, North Carolina.

SPRING MEETING OF THE AMERICAN CHEMICAL SOCIETY

The spring meeting of the American Chemical Society will be held in Washington, D. C., April 21 to 26, 1924, inclusive. An interesting program is in preparation for the sessions of the Rubber Division and a very full attendance of rubber chemists is expected. Abstracts of papers to be read at this meeting will be available early in April. The chairman of the crude rubber committee announces that the committee's report will be distributed to the members in time for consideration before the meeting.

On the evening of Thursday, April 24, the Rubber Division will hold a dinner smoker to include special features of entertainment.

CHIEF OF RUBBER DIVISION VISITS EUROPE

P. L. Palmerton, chief of the rubber division of the Department of Commerce, sailed on March 22 for Europe, where he will review conditions in the rubber goods trade of several countries, including England, France, Belgium, and the Netherlands. Remaining abroad about two months, Mr. Palmerton will give particular attention to certain questions which have been referred to him by American manufacturers.

The Rubber Trade in New Jersey

Manufactured Goods

The manufacture of balloon tires in New Jersey and particularly in Trenton has resulted in a cut in the production of the regular cord tires, but has had no effect on the general output. Orders for balloon casings are gradually increasing and manufacturers feel greatly encouraged by the continued demand for low pressure tires. The makers believe that it is only a question of time before all motorists will equip with balloon tires. The cost of changing rims and the extra cost of balloon tires causes many automobile owners to retain the old style tire, but some manufacturers are turning out balloon type tires that can be attached to the old rims without much trouble. Many of the automobile manufacturers will shortly begin to place on the market new machines equipped with balloon tires.

Manufacturers of rubber footwear report a falling off in orders, but the rubber heel and sole end of the business remains good. In fact, orders for soles and heels have increased of late. Plants making druggists' sundries announce business increasing, with better orders for tubing and hot water bottles.

Ajax Producing Balloon Tires

The Ajax Rubber Co., in addition to regular production, is busy manufacturing about 300 balloon tires a day, and it is expected that production will be doubled in another month. A full line of balloon type tires to fit present rims is being made, and the output will be increased as rapidly as possible.

Since the Ajax Rubber Co. began making balloon tires orders have been rapidly increasing. The popularity of the Ajax balloon tire is evidenced by the fact that a number of large automobile companies are equipping with this new casing. There are many autoists who prefer the balloon tire but object to the cost of new rims. For this trade the company supplies a balloon type tire that can be applied to standard rims.

It is believed that the majority of car builders will, during the coming season, supply new machines with balloon tires as original equipment.

Murray and Empire Plants Busy

Both the Murray Rubber Co. and the Empire Tire & Rubber Corp. continue operating 24 hours a day and have many orders to fill.

The month of February was the largest in the company's history, while the previous January was a close second. The mechanical departments are running night and day on orders for garden hose. The company now ranks first in producing tires and mechanical goods and is said to be the largest Trenton plant in the purchase of fabrics.

Dealers are running short of stock and this greatly benefits the output of tires. The company is making but few balloon tires, but will increase the output in the early summer.

Howe Rubber Co. Will Continue Operations

The Howe Rubber Co., New Brunswick, New Jersey, has reduced overhead expense by laying off a number of hands. An official of the company recently said: "Despite rumors we are not going to close down. We cut down our organization personnel about one-half. This was done because formerly our overhead expenses were out of proportion to our profits. With a little reorganization we found that we could carry on our work with a great deal less help."

Trenton Notes

The hearing to continue the receivership of the Bergougnan Rubber Corp. for a period of three months, which was to have been held before Federal Judge William N. Runyon at Newark, New Jersey, on March 17, has been laid over for two weeks. The receivers, Charles E. Stokes, of the Home Rubber Co., and Gaston Tisne, treasurer of the Bergougnan Corp., petitioned the court to continue the receivership and the court set a date for the stockholders to show cause why the petition should not be granted. The Bergougnan plant is running to normal capacity under the receivership.

The Acme Rubber Manufacturing Co. has decided for the present to give up building a new office structure. The contemplated structure will be 80 by 40 feet and two stories high, and work may be started on it in the early fall. The Acme company continues busy in all departments and has not yet ventured in the balloon tire field.

An interesting address on "Balloon Tires" was given recently to members of the Trenton Rotary Club by William W. McMahan, general manager of the Ajax Rubber Co. He gave details regarding the change from the old style tire to the balloon type and of the comfort derived from the new casings. Mr. McMahan predicted a big demand for the new tires after the autoist has become used to them.

The Pierce-Roberts Rubber Co. announces that business has increased considerably during the past two months and that the plant is now running to capacity. The company manufactures druggists' sundries and a few lines of mechanical goods.

The Trent Rubber Co. is running normal at the Trenton plant and will shortly begin the manufacture of balloon tires.

Sir Sven Nerell, chief engineer of Norrlands Relief Work for Sweden, visited Trenton recently and inspected several rubber plants. At the Essex Rubber Co.'s plant he was shown how heels and soles are made, and at the other rubber factories he learned how tires and mechanical goods are made. He is investigating industrial conditions while in this country.

Practically all the rubber manufacturing companies of Trenton had exhibits at the Annual Automobile Show held at the Second Regiment Armory in February. Aside from the old style cord and fabric tires, the new balloon tires were also shown.

An award of $25,000 has been made to Mrs. Thirza A. Foley, whose husband, Arthur Foley, a traveling salesman in the employ of the Home Rubber Co., lost his life on the *Lusitania* May 7, 1915. A daughter, Mrs. William Van Syckle, who was a minor at the time her father was killed, received an award of $5,000.

Ernest L. Harris, United States Consul at Singapore, recently visited the Trenton Rotary Club, where he gave a talk to a number of Trenton rubber manufacturers on the crude rubber situation and the Stevenson restriction plan. Mr. Harris was accompanied by P. J. Stevenson, manager of the Philadelphia office of the Bureau of Foreign and Domestic Commerce.

Frank F. Fox, of Trenton, who died recently, left an estate valued at $30,000. His son, Horace W. Fox, was named as administrator by the surrogate's office. The estate is to be divided between the widow and two sons.

The Trenton Tire Dealers' Association has decided to hold the charter open for another thirty days. A drive is being made for new members and it is expected that the membership will be 100 per cent before the charter is closed.

Mrs. C. Edward Murray, wife of General Murray, president of the Crescent Insulated Wire & Cable Co., has been elected regent delegate to the National Congress of the Daughters of the American Revolution, to be held in Washington, D. C., in April.

J. C. Bolt, formerly connected with the Firestone Tire & Rubber Co., has been recently appointed secretary and treasurer of the Globe Rubber Tire Manufacturing Co., Trenton, New Jersey. The company is reported to be turning out more tubes than tires. It has not yet been decided to make balloon tires.

The various rubber companies of Trenton recently contributed sums of money to the Trenton Hospital for Crippled Children.

The Whitehead Brothers Rubber Co. reports that business is slackening up a little, but the plant is running normal in the garden and fire hose departments.

Charles E. Stokes, president of the Home Rubber Co., and Mrs. Stokes have returned from Palm Beach, Florida, where they spent part of the winter.

Bruce Bedford, president of the Luzerne Rubber Co., and Mrs. Bedford have gone to Nassau in the Bahamas, for a short trip.

Edward B. Fulper, vice-president of the American Oil & Supply Co., and Mrs. Fulper have returned home after spending five weeks in South America and the West Indies.

New Jersey Notes

A large warehouse and property in Newark, New Jersey, consisting of two acres have been recently purchased by the Consolidated Products Co., Inc., 15 Park Row, New York, N. Y. The organization, headed by J. Guter, makes a specialty of rebuilt rubber machinery.

The Lambertville Rubber Co., Lambertville, New Jersey, has been compelled to cut down the working time to four days a week. The company reports a falling off in spring orders.

The Rubber Trade in Rhode Island

Conditions in the rubber manufacturing plants of Rhode Island appear to be somewhat uncertain because of the conflicting reports that come from the factories,—one plant expanding its working schedules, while another threatens curtailment of working forces and schedules. There is a unanimity of opinion on the part of the management of all the concerns engaged in the manufacture of footwear, however, that weather conditions have been far from conducive to the encouragement of factory activities for the last several months.

During the past four months the factory of the National Rubber Co. has not been operated on full time, the curtailment of production amounting to nearly sixty percent, it is said. The shoe divisions have been operated on a four and a five-day-week schedule. Further curtailment is said to be necessary on account of lack of orders. There are 3,100 factory employes in the shoe division, and the wire division employs 300 persons.

In direct contradiction of this condition the mills of the Woonsocket Rubber Co.—the Alice Mill at Woonsocket and the Millville Mills at Millville—are entering upon an expansive period, judging from the announcements that were made during the early part of the past month and the latter part of the month previous. The Alice Mill at Woonsocket, which had been operating on a four-day-week schedule for some time, started on a five-day schedule on March 3, the change affecting 1,500 employes. On February 18 the Millville plant at Millville started on a full time schedule. Since the first of the year the plant has been operating on a five-day-schedule. The increase of working hours will affect all of the more than 700 employes in the plant.

At the recent annual meeting of the Industrial Relations Association, H. Gardner Lund of the Woonsocket Rubber Co., Woonsocket, was elected a member of the executive committee. In conformity with a new feature of the association's program a large party inspected the Alice Mill on February 28 as the guests of Mr. Lund. Following the inspection the delegation returned to Providence for the monthly dinner at the Hotel Dreyfus and the regular meeting of the association.

A charter was granted the past month under the laws of Rhode Island to the Providence Insulated Wire Co., which is to be located in Providence for the manufacture of all kinds of wire, with an authorized capital stock of $2,500,000. The incorporators are Kenneth J. Tanner, Charles G. Edwards, and Ogden A. Lindsley. According to the records, the Bourn Rubber Co. has sold eight parcels of land with buildings thereon, on the south side of Waldo street, as well as property on the north side of Wadsworth street, with machinery, tools and equipment, to the Providence Insulated Wire Co. The purchase price was approximately $40,000.

The Mutual Benefit Association of the Davol Rubber Co. held the annual minstrel show and entertainment recently at the Elks' Auditorium. There was an attendance of more than 1,500. Winners in the bowling league received their prizes at the fifth annual dinner held at the Dreyfus Hotel. E. L. Hanna was toastmaster and the principal speaker was C. H. Bamford, secretary of the company.

The Corcoran Tire Co., 131 Fountain street, Providence, is being conducted by Edward T. Corcoran and John V. Corcoran, of East Providence.

Wendell R. Davis, formerly purchasing agent at the factory of the National India Rubber Co., Bristol, is now employment manager for the United States Rubber Co. at its New York office.

The United States Rubber Co. has been granted permission by the Inspector of Buildings to erect an addition to one of its two-story factory buildings on Valley street, Providence. It will be of brick and conform to the remainder of the building.

The Rubber Trade in Massachusetts

Manufactured Goods

March gave New England another real taste of winter that stimulated retail rubber footwear sales, but came too late to reach manufacturers, who are still operating on short time and are now engaged chiefly on canvas footwear for summer wear. Rubber heels and soles are in seasonally large production under keenly competitive conditions.

Tire output is increasing in anticipation of the spring driving season, though demand has been good throughout the winter. Unfortunately under present prices and conditions this business is not adequately profitable. Popular interest in balloon tires, however, has renewed the hopes of the trade, though manufacturers in Massachusetts have not done much with these new tires as yet.

Building operations, curtailed a little during the past month, are again increasing and insulated wire manufacturers are well supplied with orders for early delivery. Mechanical rubber goods are in fair demand, with garden hose, jar rings and similar goods in seasonally heavy production. The activities of proofers and weatherproof clothing makers are also greater at this season of the year. This also applies to the automobile topping trade.

Boston Automobile Show

All records for sales and attendance were shattered at the Automobile Show held at Mechanics' Building from March 8 to 15 inclusive. Balloon tires were an outstanding feature. Although none of the tire manufacturers exhibited directly, balloon and regular cord tires of various makes were displayed by local distributers and accessory dealers, while balloon tires were also shown as optional equipment on many of the season's new cars.

Corduroy balloon tires were shown by the Coward Auto Supply Co.; Hewett tires by the Green & Swett Co.; Henderson and Marathon tires by the Central Automobile Tire Co.; Lambert Trublproof cushion tires, J. W. Coyle Corporation; Star tires, Boyce Motor Equipment Co.; Superior tires, Merchants Tire Co.

Tire buffers were exhibited by the Eggleston Supply Co.; tire carriers by the New Era Spring & Specialty Co.; tire chains and accessories by the American Chain Co., Inc., Arrow Grip Manufacturing Co., Inc., and the United States Chain & Forging Co.; tire locks by the Pines Manufacturing Co.; tire straps by the Russell Manufacturing Co.; tire valves and accessories by A. Schrader's Son, Inc.; air hose and valves by the Brunner Manufacturing Co.; brake linings and clutch facings by W. E. Davis & Co. and the Russell Manufacturing Co.; wire and disk wheels by the Budd Wheel Co. and the Wire Wheel Corporation of America.

Among the rubber specialties displayed were rubber paint by the National Compound Co., Inc.; rubber weld by the Rubber Weld Sales Co.; Seiberling rubber wheels by the Miles Piston Ring Sales Co., and Weldo patches and accessories by the Weldo Rubber Co.

Boston Insulated Wire & Cable Co.

Since its establishment in 1905 the Boston Insulated Wire & Cable Co. has become an important factor in the rubber covered wire trade of Massachusetts. The first factory was in rented premises on Freeport street, Dorchester. In 1909 a plant was built on Bay street, near the Savin Hill station of the New York, New Haven & Hartford Railroad. As the company's business extended to other parts of the country, plant additions were made, notably in 1918, 1920 and 1923, and the works now comprise several thoroughly modern and well equipped brick and concrete factory buildings. The manufacturing consists of copper wire drawing and insulating with rubber. The product comprises solid, stranded and flexible wires, a great variety of cords, special cables, elevator lighting, operating and annunciator cables, railway signal wires, telephone wires, also automobile, ignition, lighting and starting wires. The plant has its own power equipment,

Plant of the Boston Insulated Wire & Cable Co.

and a spur track on which the coal supply is dumped close to the boiler room. This track also serves for incoming materials and shipments of finished product.

In 1911 a branch factory was established at Hamilton, Ontario, and in 1918 this branch was changed to a Canadian corporation. The business, since its beginning, has been under the management of H. B. Burley, president and treasurer. Henry E. Rooney is plant superintendent.

Boston

Some 400 employes of the Simplex Wire & Cable Co. are to share in that firm's profits. The announcement of this substantial dividend was made by Everett Morss, president of the company, at a recent profit-sharing banquet given to employes at the American House. Entertainment was furnished by the employes.

Benjamin Thomas, of the Hood Rubber Co., Watertown, is a member of the industrial comptrollers' group of the Bureau of Commercial and Industrial Affairs of the Boston Chamber of Commerce. A report is being prepared defining the duties which have come to be known as comptrolling and showing what place they occupy in the industrial organization.

On March 24 the Boston office of the New Jersey Rubber Co., reclaimers of tire frictions, was removed to 211 Congress street, corner of High street.

An involuntary petition in bankruptcy has been filed in the United States District Court against the George Grow Tire Co. The petition declares that Arthur F. Morse was appointed receiver for the company November 13, 1923, to take charge of the company's property and that this appointment constituted an act of bankruptcy.

Since September 1, the Boston Woven Hose & Rubber Co. has been producing more than fifty tons of finished rubber goods a day. To accomplish this 20,000,000 pounds of steam are used a week, 40 per cent for vulcanizing. This 40 per cent is made to work twice by passing it first through a newly installed turbine developing 300 K.W. of electricity per hour and then going on for vulcanizing service. This idea adds $25,000 a year to operating savings and the extra electric power generated will operate, practically without cost, six new mills now being installed for refining.

The Wm. W. Edelstone Fabric Co., 136 Federal street, is now manufacturing cord tire and novelty fabrics in its mills located at Westbrook, Maine. Present production includes both first and second quality cord fabrics and laundry nettings. Wm. W. Edelstone is president and sales manager, H. Edelstone, treasurer and purchasing agent.

Frank R. Stone, for many years connected with the United States Rubber Co., and later with the Marathon Rubber Products Co., is now representing the rubber clothing division of the Clifton Manufacturing Co. in the Middle West.

The steamship "President Harrison" which inaugurated the first round-the-world freight and passenger service of the Dollar Steamship Line, touching at the principal rubber ports of the Far East, was due to arrive in Boston on March 24. A large delegation of California business men is making the initial trip. This is the beginning of a bi-weekly schedule furnishing increased crude rubber cargo service into the port of Boston.

K. B. Osborne has engaged in the crude rubber brokerage and general commission business at 15 State street, Boston, under the firm name of K. B. Osborne & Co. Working alliances have been made with leading operators in the New York market and with a local factory for conditioning crude rubber. A connection with the Asiatic market is assured in the near future. Mr. Osborne has had an extensive training in the rubber trade, both domestic and foreign, including long experience in various capacities at the Hood Rubber Co. plant and as crude rubber buyer for that firm in Singapore, whence he recently returned.

On March 24, 1924, the main offices of the E. H. Clapp Rubber Co. were removed to 211 Congress street, Boston, Massachusetts.

Frank McIndoe, formerly connected with the Tidewater Chemical Co., has been recently appointed the New England representative of L. H. Butcher Co., Inc., 239 Front street, New York, N. Y., specialist in colors and chemicals for the rubber trade. Mr. McIndoe will make his headquarters at 49 Federal street, Boston, Massachusetts.

Massachusetts Notes

F. S. Webster has been reelected chairman of the advisory board of the New England Tire & Rubber Co., Holyoke, while S. R. Huntley has been elected secretary of the advisory board.

The Quincy Rubber Store, 1530 Hancock street, Quincy, is among the newer retail stores of the Boston metropolitan district that specializes in rubber goods.

Since the manufacture of vulcanized rubber goods began in New England some generations ago, that business in this district has grown like the proverbial mushroom, and today Boston is the center of a $100,000,000 rubber goods industry. Thereabouts today are made about half of all the rubber boots and shoes for the whole country, and nearly 25,000 persons are now engaged in automobile tire manufacture in Massachusetts. Three companies alone employ, when busy, about 15,000.

The Hood Rubber Co., Watertown, manufacturers of rubber footwear, automobile tires and other rubber products, has plans under advisement for enlarging its plant for increased output, including improvements in existing buildings and equipment. Part

of the $1,600,000 fund obtained through the preferred stock issue recently authorized is to be used for the expansion.

The Rubber Trade in Ohio

Manufactured Goods

The first quarter of the year has proved a surprise in the rubber industry because reports from the larger factories in Ohio indicate that it has been a period of profit despite the low tire prices which obtain, and because it was predicted at the end of 1923 that unless tire prices were advanced the present year would be without profit, as had been the last half of 1923. However, official and unofficial statements which have been issued indicate that the first three months of the year have been almost as profitable as the corresponding period of last year when prices were comparatively high. E. G. Wilmer, chairman of the board of the Goodyear Tire & Rubber Co., Jacob Pfeiffer, president of the Miller Rubber Co., B. G. Work, president of The B. F. Goodrich Co., and William F. O'Neil, president of the General Tire & Rubber Co. are among the leaders who are optimistic regarding the great demand for tires; the ease with which they are moving to the dealer and to the public; and the savings which have been brought about to turn the business from an unprofitable to a profitable basis. Mr. Pfeiffer, one of the most conservative of rubber manufacturers, in the course of a public address stated that the automotive and rubber industries were perhaps never on a better and more solid foundation in the history of the industry.

Goodrich earnings are said to be much better than last year; unconfirmed earnings of Goodyear for January are reported to be approximately $1,000,000, which is the monthly average for 1923, while the other companies all report satisfactory returns.

Tire production has increased slightly during the past month and output now registers close to 105,000 tires a day in the Akron district. This is slightly under estimate for a year ago but it is stated on good authority that output at the end of next month will exceed last year.

In mechanicals, toys, druggists' sundries, and footwear, utmost satisfaction is expressed in prevailing conditions. While reports from other districts indicate lower production of reclaimed rubber due to low price of crude, the largest producer in this district and probably in the industry reports that operations continue at a very satisfactory rate. The consumption of reclaimed rubber is estimated to be 350,000,000 pounds annually.

The only mention of prices made during the month came from the Goodrich company, which reduced balloon tire prices in conformity with reductions made last month by the Firestone Tire & Rubber Co.; and the statement by President Work that he believed tire prices would not change for some time.

General Factory at Capacity

The General Tire & Rubber Co. states that it will not add any more dealers to its list for the next three months. This is the first definite declaration by any of the large tire companies this year to indicate the condition of the industry for 1924.

The following statement by President O'Neil gives a summary of the situation:

"We have built three plant additions within the last twelve months, and although operating at peak capacity, we are still behind orders. We owe the accounts we have the best service possible, and within a short time our capacity will be increased another 50 per cent.

"We are proud of our dealer organization and its ability to serve the public, and our present stand will enable us to thoroughly protect our tire merchants through the season of heaviest consumer demand, so that the growing trade of the company will be handled with minimum delay."

Officials of the company state that the great demand for balloon tires is not the sole cause of the present situation, and that the demand for regular sized, low air pressure tires for passenger cars and commercial work is greater than ever before.

Goodrich Cuts Overhead

The B. F. Goodrich Co. will make a better showing during the present year than during the year just closed, which from a profit viewpoint was rather disappointing. The company is at present making in excess of 22,000 tires a day, which is a larger number than made for a comparatively long time, while its other departments are operating close to capacity.

President B. G. Work recently made the following statement regarding Goodrich business just previous to sailing for Europe for several months' vacation:

"Outlook for the tire industry is better than a year ago. I think there will be more stability to tire prices and no change in the near future. Our earnings are good. They will be improved by economies we are now putting into force, such as cutting down our overhead, our office force, and certain improvements in our adjustment program."

Incidentally Mr. Work discussed the means for reducing costs suggested last month by vice-president W. O. Rutherford, through reduction in advertising among other methods. Mr. Work said in this connection, "We intend to continue advertising in newspapers and not exclusively on billboards."

Goodyear Curtails Production Costs

Curtailment in production costs in the rubber industry here have been much discussed, but actual figures were revealed for the first time by E. W. Wilmer, chairman of the board of the Goodyear Tire & Rubber Co., in the course of an address to the East Akron board of trade.

"At the peak Goodyear had 4,500 men and women on its salary payroll. At the present time this number has been reduced to 1,500. At the peak the company had 30,000 laborers, while now it has in the neighborhood of 10,000. From the peak to the present time the payroll has been reduced $30,000,000 annually. The depression period taught the rubber industry efficient methods and as a result it is turning out better goods than formerly when multiple forces were employed."

Balloon Tire Production

While accurate figures are not available, it is estimated that the present production of balloon tires in the United States is very close to 5,000 a day, of which more than 75 per cent are manufactured in the Akron district. This figure compares with 3,500 balloon tires, the estimated output three months ago. It now seems certain that when the motoring season opens it will be impossible for the manufacturers to meet the demand for these new tires.

The expense of changing production to this type of tire will be high. One of the larger companies estimates that the cost would not be less than $1,000,000 during the present year. This high cost will prevent many of the smaller companies, which are unable to procure the necessary funds, from making balloon tires.

Akron Notes

At the annual meeting of The Adamson Machine Co., manufacturer at Akron, Ohio, of special rubber machinery, the following officers were reelected: Alexander Adamson, president and general manager; R. B. Koontz, secretary, treasurer, and assistant general manager; and W. E. Slabaugh, vice-president. Other executives include George S. Whitney, general superintendent; T. H. Williams, chief engineer; and Lloyd Wolfsperger, superintendent of the iron and steel foundry department. The company reports increasing production with excellent prospects for business during the present year.

Operations at capacity are now being carried forward at the plant of The Swinehart Tire & Rubber Co., Akron, Ohio, in the

manufacture of cushion tires which meet a special need. Swinehart cushion tires are built on Hayes, Kelsey and Firestone rims, and their substitution for pneumatic casings is easily accomplished.

R. S. Saalfield, formerly assistant treasurer and later treasurer of The Star Rubber Co., Akron, Ohio, has been recently appointed sales manager of that organization. Mr. Saalfield has had a wide experience in the rubber industry, and has spent four years in the Far East.

B. C. Swinehart, formerly sales manager of The Erie Tire & Rubber Co., is now vice-president and general manager of The Henry Cord Tire Co., Akron, Ohio. The last-mentioned organization specializes in the manufacture of 30 by 3½ clincher cord tires.

F. H. Wessell will represent, in the state of Ohio, the L. H. Butcher Co., Inc., 239 Front street, New York, handling a complete line of that company's colors as prepared for the rubber industries. Mr. Wessell will be at 315 Central Savings & Trust Building, Akron, Ohio.

The Portage Brokerage Co., Akron, Ohio, specializing in palm and Niger oils, has been recently appointed distributing agent for the L. H. Butcher Co., Inc., 239 Front street, New York, N. Y.

William A. Baker, formerly in charge of the Detroit offices maintained by The Firestone Steel Products Co., Akron, Ohio, recently removed to Akron, where he will be in charge of the company's sales.

Mohawk Rubber Co. of Akron is reported to be producing approximately 650 tires a day, which is more than a 50 per cent increase in production during the past three months. Other anticipated increases in production will bring the plant to maximum capacity in the next two months.

Trump Brothers Rubber Co., Akron, Ohio, announces unofficially that tire production has reached approximately 100 a day but that no special efforts are being made to increase sales or capacity at the present time. The company entered the tire field after confining itself for two years to belts and other small rubber goods.

Northern Rubber Co., Akron, Ohio, announces that production is approximately 50 tires a day and that in addition to its own products the company is building a few tires for another small Akron company and also leasing part of its space to an Akron company making a small number of battery boxes. The company was organized approximately a year ago by Louis Schott, formerly president of the Amazon Tire and Rubber Co.

Ohio Notes

The Buckeye Rubber Manufacturing Co., Willoughby, Ohio, contemplates many changes, including the installation of a number of electrically heated presses, additional lines of goods such as molded specialties, radiator hose, and table work of every description. The manufacture of mats and matting will also be continued. C. E. Hyke, for seventeen years factory manager of the Western Rubber Co., Goshen, Indiana, is now acting in a similar capacity for the Buckeye company.

The Clyde E. Lowe Co., Cleveland, Ohio, specializing in the construction and rebuilding of mandrels, is now erecting a factory building that will triple the present floor space and provide for a daily production of seventy-five circular mandrels. The new building will be ready for occupancy in approximately three months' time, and prospects for business in the new location are most encouraging.

A new branch office has been recently opened at 404 Superior Building, Cleveland, Ohio, by J. M. Huber, Inc., 130 West 42nd street, New York, N. Y., manufacturer of dry colors and carbon black. C. B. Patterson is in charge.

The L. H. Butcher Co., Inc., 239 Front street, New York, N. Y., manufacturer of colors and chemicals for the rubber trade, has recently appointed McCormick & Radlin, 244 Engineers Building, Cleveland, Ohio, as its exclusive distributers in the Cleveland territory.

Taking Cleveland and northern Ohio as its territory, the Henry L. Grund Co., Bulkley Building, Cleveland, Ohio, will represent the color manufacturing organization known as A. B. Ansbacher & Co., Inc., New York, N. Y. R. A. Sperry, associated with the Grund company, will handle the sale of the Ansbacher colors among the rubber manufacturers of Akron, Ohio.

The Wilson Rubber Co., Canton, Ohio, is completing a new building which will increase plant capacity by approximately 35 per cent. The output at the new addition will be confined to the company's specialty, the manufacture of surgeons', electricians', and household gloves. Executives of the Wilson company include: John S. Willis, president; Fred J. Wilson, vice-president and general manager, and Wendell Herbruck, secretary and treasurer.

Although assets of the McGraw Tire & Rubber Co., East Palestine, Ohio, considerably exceed liabilities, the appointment of a receiver was a short time ago considered advisable. Unfortunate contracts for fabric and rubber during 1920 were the chief cause of the present difficulties.

Joseph M. Dine has been recently appointed sales manager of The Erie Rubber Corporation, Sandusky, Ohio. The company is at present manufacturing a new type of cord tire. Balloon tires are also being produced.

G. L. Livingston has been recently placed in charge of the export department maintained by The Mason Tire & Rubber Co., Kent, Ohio.

Announcement is made that the Akron Rubber Reclaiming Co., Barberton, Ohio, which purchased the former Ohio C. Barber cement mill to produce reclaimed rubber will be ready for operations early in June. Capital will be in the neighborhood of $350,000, it has been unofficially stated.

Willis Bacon, receiver for the Tuscora Rubber Co., New Philadelphia, Ohio, has received an order of sale for the plant and other assets of the company from the Federal court. The property of the company has been appraised at $220,000, of which machinery and fixtures are valued $70,612, real estate and buildings $140,025 and other real estate $9,400.

The Triangle Rubber Co., which leased the former Gordon Tire & Rubber Co. plant at Canton is now making 300 tires a day. The officers of the company are: G. S. Schaeffer, president; John Schubach and R. W. Kent, vice-presidents; A. R. McConnell, secretary; and John Quinn, treasurer.

A daily production of about 300 tires has been maintained throughout the winter at the plant of The Standard Tire Co., Willoughby, Ohio. Beginning with the middle of April an increased output is contemplated. R. J. Firestone is president.

The Rubber Trade in the Midwest

Midwest Rubber Manufacturers' Association

Thomas Follen, president of the Lion Tire & Rubber Co., and also president of the Midwest Rubber Manufacturers' Association, presided at that organization's regular monthly meeting which was held on March 11 at the Hotel Morrison, Chicago, Illinois. The chief speaker of the occasion was E. O. Blekre, president of the Blekre Tire & Rubber Co., who discussed some of the problems of the small manufacturer and also some of the difficulties attending balloon tire construction. The next meeting of the association will probably occur on April 11.

Midwestern Notes

A reorganization and a removal to more commodious quarters at 1514 South Michigan avenue, Chicago, Illinois, is reported by the Motor Tire Sales Corporation. The company maintains a

general jobbing business throughout the Chicago district, handling "Goodwell" tires exclusively. W. G. Downie, general manager of the organization, was formerly connected with the Dayton Rubber Manufacturing Co. as general sales manager.

J. P. Patterson, formerly in the export department, is now branch manager of the Firestone Tire & Rubber Co., Akron, Ohio, at Chicago, Illinois.

The Grant Auto Appliance Co., manufacturer of "Surety" extension pedal pads and foot accelerators and of "Grant Clamp-On" pedal pads, all for Ford cars, has removed from 222 South Clinton street to 2415-2417 West 14th street, Chicago, Illinois.

The Lambertville Rubber Co., Lambertville, New Jersey, has opened a branch in the Less Building, Chicago, Illinois, situated in the heart of the rubber footwear district. C. C. Alexander will be in charge for an indefinite period. Three new salesmen have been added to the staff for that territory. Mr. Alexander is sales manager for the company.

The Hodgman Rubber Co., 25 West 43rd street, New York, N. Y., has recently opened a branch office at 2284 West Euclid avenue, Detroit, Michigan, in charge of Stephen A. Douglas. Vehicle manufacturers are increasing their purchases of Hodgman topping material, and sales of such goods are said to be very satisfactory.

Alvan Macauley, Jr., was recently appointed manufacturers' representative for the Firestone Steel Products Co., Akron, Ohio. Mr. Macauley's territory includes the state of Michigan.

As Detroit representative and making his headquarters at 1500 Real Estate Exchange Building, Detroit, Michigan, Charles C. Walsh will cover the states of Michigan and northwestern Ohio in the interests of the Falk Corporation, manufacturer at Milwaukee, Wisconsin, of special rubber machinery.

The Burdick Tire & Rubber Co., Noblesville, Indiana, reports a considerable increase in the working force and that in the near future the output will be 300 tires and 500 tubes a day. All outstanding obligations have been met, sales are increasing, and prospects for the future appear to be excellent. Main offices are at 10 LaSalle street, Chicago, Illinois. H. G. Steinbrenner, president; F. E. Teachout, secretary and treasurer; and H. M. Bradford, general factory manager.

The following officers of the Western Rubber Co., Goshen, Indiana, have been elected: Harris Oppenheim, president; B. F. Deahl, vice-president; G. B. Slate, secretary and treasurer; and E. W. Bonnett, superintendent. Directors include the first three of the executives mentioned, and also Ray Deahl and Milton M. Latta.

L. A. Brown has been recently re-elected president of the Corduroy Tire Co., Grand Rapids, Michigan, while H. H. Hubbard has been appointed western sales manager. The latter was previously employed in a similar capacity by the United States Tire Co.

At the annual meeting of the stockholders of The Hannibal Rubber Co., Inc., Hannibal, Missouri, the following officers were elected: Henry Moodie, president; J. A. Dustman, vice-president; S. O. Osterhout, treasurer, and C. A. Swinehart, secretary and general manager. The new board of directors consists of eight members, four of them being the executives just mentioned.

The Falk Corporation, Milwaukee, Wisconsin, manufacturer of gears and special equipment for rubber mills, announces the appointment of Clarence R. Falk as secretary and treasurer. Mr. Falk succeeds E. A. Wurster, the latter having been connected with the company since its organization.

The report of the purchase at a receiver's auction sale of the plant of the Perfection Tire & Rubber Co., Fort Madison, Iowa, has been recently confirmed. The successful bidder was C. W. Mills, of Wilmington, Delaware, who secured the plant in its entirety for $283,100.

The L. H. Butcher Co., Inc., 239 Front street, New York, N. Y., has appointed Frank Hancock and C. F. Heilman as the company's resident agents, the former taking the Chicago district as his territory, while the latter will be stationed at Detroit.

At the annual meeting of the stockholders of the Sprague Tire & Rubber Co., Omaha, Nebraska, the following officers were elected: E. H. Sprague, president and treasurer; Alvin Pierson, vice-president; and J. E. Fitzgerald, secretary.

The Rubber Trade on the Pacific Coast

Manufactured Goods

Manufacturers and distributers of rubber goods on the Pacific Coast, with scarcely an exception, are quite enthusiastic about trade prospects for the remainder of the year. Spring orders are very much heavier than a year ago. The scarcity of rain has resulted in building trade activity with the result that mechanicals and similar rubber goods are in lively demand, and some of the largest concerns are planning to carry double the stocks heretofore maintained.

Exceptional expansion among public utility enterprises, and increasing activity among oil, mining, and various other industries, add much to the general optimism. Tire sales and rubber automobile accessory sales are especially good. Druggists' sundries are in excellent demand. Rubber heel makers report trade very good. Distributers of eastern rubber boots and shoes are disappointed with sales but find some satisfaction in good prospects for canvas-rubber footwear.

Pacific Coast Tire Trade Developments

Pacific Coast tire prospects continue to make strong appeal to large operators in the rubber industry. Several important tire concerns on the Coast are planning for larger trade conquests not only in far west states but also in the Midwest and the Orient. Eastern manufacturers are also studying the Pacific Coast with a view of establishing large manufacturing branches at strategic points.

The chief argument advanced for factories on the Coast are the rapid growth in population, favorable climatic and industrial conditions, nearness to rubber, cotton, and other sources, and the fact that although 30 per cent of the casings and tubes made in the United States are sold west of the Mississippi yet only 3 per cent of those goods are made in this territory.

The next big development is promised in the making of solid tires. In the territory named, this business is now computed at $40,000,000 a year, and coastal rubber men talk earnestly of going into the production of solids in the very near future.

The Plant Rubber & Asbestos Co.

The Plant Rubber & Asbestos Works, 537-539 Brannan street, San Francisco, Sidney L. Plant, president, is one of the busy rubber manufactories on the Coast. Garden hose orders for spring delivery are 10 per cent more than last year; sales of belting for the past year were but 60 per cent of the 10-year average, due largely to the more general use of the direct-connected motor operated by hydro-generated electric current; steam, suction, and water hose are in fair demand. The company's principal outlet for rubber has been in the lower priced C. I. sheet packings, gaskets, valves, and low steam pressure packing. The company specializes in high pressure spiral asbestos packings for the marine and export trade and in pipe and boiler coverings made at the company's factory in Redwood City, California.

San Francisco

The Virginia-Carolina Rubber Co., Richmond, Virginia, has opened a distributing agency for the Pacific Coast at 500 Golden Gate avenue, San Francisco, the chief specialty being the Va-Car

tire plaster, a 3-ply rubberized fabric article having a soft gum plug center and coated on the inner side with self-vulcanizing cement.

The Variety Rubber Co., manufacturers of rubber syringes and dipped goods, is contemplating the removal of its plant from San Francisco to Los Angeles, where conditions would be more favorable.

The Ralphs-Pugh Co., Inc., 530-532 Howard street, reports increased sales of high grade rubber goods. The concern is exclusive Coast representative of the Wilson Rubber Co., glove manufacturers, and also has the agency for the Beacon Falls Rubber Shoe Co., and Acme tires and tubes.

Charles W. Harris, division manager for the Pacific Coast for the Hewitt Rubber Co., Buffalo, N. Y., reports an urgent demand for balloon tires and that he has sold several carloads since January 1.

E. C. Myers has recently been appointed western representative of the Falk Corporation, Milwaukee, Wisconsin, and will make his headquarters at 320 Rialto Building, San Francisco, California. He will handle Falk herringbone gears and other special equipment throughout his territory, which includes the states of California, Oregon and Washington.

F. H. Hurst has been recently appointed Pacific Coast manager for the Ajax Rubber Co., Inc., 218-222 West 57th street, New York, N. Y. W. S. Tullis has been placed in charge of the company's San Francisco branch.

Los Angeles

The Goodyear Tire & Rubber Co.'s plant in Los Angeles, despite the fact that a large volume of spring-dating orders have been filled, still keeps well up to the high winter average, over 4,000 casings and 4,500 tubes a day. A lively demand is reported for the new balloon tires in both types. In general rubber goods, an increased demand for sheeting has been noted of late. John A. Shea, head of the advertising and sales promotion department, has resigned and C. L. Vaughan takes his place.

Business is reported unusually good by the Featherlike Pneumatic Products Co., 5,911 Moneta avenue, which manufactures air pillows, mattresses, life preservers, and other inflatable rubber goods. The concern was established two years ago and is steadily broadening the market on the Coast for its specialties.

F. M. Beall, 1302 Washington Building, is now looking after the Southern California interests of the Boston Woven Hose & Rubber Co., hitherto represented by Lippincott & Beall, Higgins Building.

According to Harold L. Arnold, 901 W. Seventh street, Southern California and Arizona afford a good market for British-made tires. Last year his concern, which has the agency in the Southwest for the Rapson super cord tire, sold $200,000 worth of these imported casings, and recently has unloaded as much as $25,000 worth in one day.

The Murray tire, a Trenton, N. J., product, will be marketed in Southern California by the Murray-Empire Tire Co., 327 W. Pico street.

Considerable new equipment is being installed at the plant of the Cactus Manufacturing Co., 7322 S. Vermont avenue, which makes a tire boot and patch of rubberized fabric studded with needles to make it non-slipping. C. J. Emons is manager of the concern and is planning for a new factory.

Running to capacity on standard sizes of cord casings and red superservice tubes, is the report of the Hendrie Rubber Tire Co., Torrance, of which Thomas H. Thropp is president and general manager.

The California Wire Co., Orange, California, the only insulated wire factory west of Chicago, did a business of over $1,500,000 last year, and is making extensions for increasing production 20,000 pounds daily. The factory averaged a daily production in 1923 of 350,000 feet of insulated wire and cable, or 80,000 pounds a day. The concern, which is scarcely two years old, has the following officers: President, Louis Koth; vice-president, Fred W. Struck; secretary-treasurer, Fred A. Grote; with W. C. Mathias and William Klug, directors.

Pacific Coast Notes

For the first year of its existence, the Columbia Tire Co., Columbia Boulevard and Mississippi avenue, Portland, Oregon, reports a considerable degree of success. The company prides itself on having one of the most modern tire-making plants in the country. Six months ago the output was but one tire per day per man; now it is three tires a day per man. The company claims that the tires are not only all hand-built but that only the best long-staple cotton is used. The present factory has capacity for 800 tires and 800 tubes per day in three shifts, and it has ample ground for expansion. Of the $3,000,000 capital, $1,250,000 has been issued. At the recent election, all the officers and directors were reelected. They were: President, R. A. Wurzburg; vice-president, Alfred A. Aya; treasurer, Lewis Wyman; secretary, K. C. Mohrhardt.

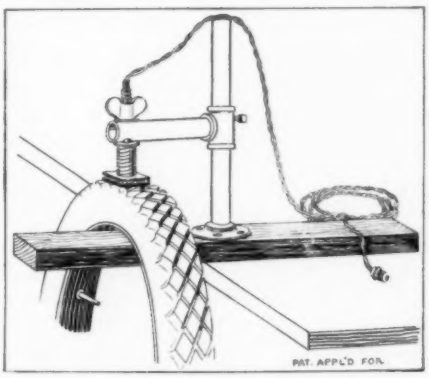
The Colby Compression Tube Co., E. Burnside and Third streets, Portland, Oregon, and of which K. Young is secretary, contemplates building a new plant to meet increasing business needs.

Rubber supplies for mining and allied industries in far western territory are in unusually good demand, according to Rudolph Orlob, manager of the Mountain States Rubber Co., 155-159 Motor avenue, Salt Lake City, Utah, one of the largest distributing concerns in the West and Northwest. It markets the products chiefly of the Hewitt Rubber Co., Buffalo, N. Y.; the Robins Conveying Belt Co., New York City; and the Electric Hose & Rubber Co., Wilmington, Del. Mr. Orlob has been in the rubber business eighteen years.

Louis Herzog, for five and a half years acting as director of purchases for The Gates Rubber Co., Denver, Colorado, has recently severed his connections with that organization. The name of his successor has not been announced.

SPOT VULCANIZER FOR REPAIRING RUBBER GOODS

The inconvenience of making a vulcanized repair of small tread cuts leads to their neglect and enlargement, finally resulting in loss of tire mileage by blowouts.



Electric Repair Vulcanizer

The illustration represents a handy device for vulcanizing a cut in a tire without removing it from its rim. The repair is simply brought under the electrically heated pad, where pressure is applied by the wing nut, and in a few minutes the damaged section is thoroughly vulcanized.

The machine is adjustable and with it any rubber article may be patched, from an inner tube, boot, hot water bottle, raincoat, rubber apron, etc., to a spot patch any place on a 44 by 10 giant tire without removing it from its rim. The machine has been in actual service for over a year and found thoroughly reliable as a practical repair tool.—National Equipment Co., Akron, Ohio.

The Rubber Trade in Canada

Manufactured Goods

Rubber footwear manufacturers are requesting retailers to place their orders for fall goods now, in order that delivery may be made on time. Prices remain the same as on January 1 of this year. The terms are net cash November 30, with 2 per cent discount for November 10 settlement. The usual 5 per cent discount for early orders remains and the guarantee against drop in price to November 1 is given as last year. The latter protects the dealer against downward fluctuation of the market and removes one of the old-time objectionable features of early ordering. Manufacturers claim that there has been no profit in rubber shoe manufacturing for a considerable period and are of the opinion that an advance in prices is feasible, but taking present day conditions into consideration they did not think it wise to advance prices.

Canadian tire manufacturers are looking forward to a big season this year, and the early approach of spring, as is expected, should keep them hustling to fill orders on time.

Building operations will shortly take on the usual busy aspect, the past winter showing a considerable gain in construction over the corresponding period of a year ago.

Canadian Rubber Industry, 1921-1922

A government report on the Canadian rubber industry during 1922 deals with the industry in two sections: rubber goods and rubber footwear. Of the 24 plants whose operations are covered by the first section, there were 20 in the province of Ontario, 3 in the province of Quebec, and one in the province of British Columbia. In the rubber footwear section 10 plants reported, of which 4 were in Ontario and 6 in Quebec. Comparative figures relating to the industry follow:

RUBBER GOODS SECTION

	1922	1921
Number of establishments	24	23
Capital investment	$35,679,805	$38,420,786
Number of employes	5,497	4,743
Salaries and wages	$6,538,353	$5,811,497
Cost of fuel	541,026	512,903
Miscellaneous expenses	3,094,574	2,969,381
Cost of materials	14,268,120	12,219,987
Value of products	31,223,238	25,618,042
Value added by manufacture	16,955,118	13,398,055

RUBBER FOOTWEAR SECTION

	1922	1921
Number of establishments	10	12
Capital investment	$14,474,698	$15,816,832
Number of employes	4,645	5,056
Salaries and wages	$3,788,565	$3,947,870
Cost of fuel	226,654	257,830
Miscellaneous expenses	1,641,277	1,610,664
Cost of materials	4,928,825	4,637,137
Value of products	14,709,830	13,851,744
Value added by manufacture	9,781,005	9,214,607

Canadian Sales Tax Amended

Under the amendment to the Canadian Special War Revenue Act, assented to June 30, 1923, but effective January 1, 1924, the manufacturer or final producer pays 6 per cent sales tax. He can either charge this separately on his invoice or include it in the price of the goods. When prices are quoted by Canadian manufacturers it will be necessary to know whether they include sales tax. There is no tax involved when buying from Canadian bicycle jobbers who are not manufacturers, the manufacturer having paid it. When goods are imported either by unlicensed wholesalers or by retailers, a sales tax of 6 per cent will in every case be collected by the Department of Customs and Excise.

Dominion Rubber Systems Advertising Campaign

This is the time of year when manufacturers of rubber footwear bring to the attention of the public their particular brand of rubber footwear, the slushy and wet weather under foot making the appeal come home. For example, the Canadian Consolidated Rubber Co., Ltd., the Dominion Rubber System, recently ran timely and appropriate newspaper copy entitled, "Protect your family's health." This was illustrated with pedestrians crossing wet pavements and slushy streets. Models of various lines were also illustrated, the text emphasizing strongly the necessity of wearing rubbers at this particular time. It is said the advertisement appeared in 69 Canadian daily newspapers having a circulation exceeding 1,568,000 copies and is one of a series of advertisements covering this company's national advertising campaign.

The Miner Rubber Co.

The Miner Rubber Co., Limited, Factory Granby, Quebec, Canada, was established in 1909 by the late S. H. C. Miner, who was formerly founder and owner of The Granby Rubber Co. The well equipped plant at present maintained by the company had originally a floor area of 130,000 square feet, now enlarged to over 200,000 square feet, while the daily production capacity is 12,000 pairs of rubber boots and shoes, including tennis shoes, besides rubber clothing and heels. The spreading room has a capacity for rubberizing 3,800 yards of cloth a day. The company, which maintains branches throughout Canada, is now employing over a thousand operatives at the Granby plant.

Canadian Notes

The Firestone Tire & Rubber Co. of Canada, Ltd., Hamilton, Ontario, announces the manufacture of balloon tires in the Canadian plant. They are the first Canadian manufacturers to offer this type of tire to the public. The company has made arrangements to supply the proper type of wheels through its distributers.

The K. & S. Tire & Rubber Co., Ltd., Toronto, Ontario, manufacturer of bathing caps, bathing shoes and various other lines of rubber goods, makes a specialty of export business.

E. C. Sharpe has been placed in charge of the Ontario division shoe sales department of Gutta Percha & Rubber, Ltd., Toronto, Ontario, replacing C. Mather, who has been transferred to the shoe department of the head office.

The Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ontario, was recently invited to advertise in the special anniversary number of the *Toronto Globe* because it was the only Canadian tire company who could qualify under the conditions, which were that the advertiser must have used space in the *Globe* at least twenty-five years ago.

A news despatch from Belleville, Ontario, states that The Champlain Tire & Rubber Co. has leased a factory in that city and will commence the manufacture of tires, tubes and miscellaneous rubber goods.

Executives of The Goodyear Tire & Rubber Co., Inc., Akron, Ohio, report that an output of 3,000 tires a day is at present being maintained by their plant at Toronto, Canada.

STAINS FOR CREPE SOLES

The popularity of crêpe soles for shoes for general as well as sport wear necessitated a new departure in colored edging stains to match the uppers. This has been done with great success by the production of a flexible stain in a variety of colors. The more common colors for crêpe soles are black, brown and white. When applied to the sole the colored material becomes permanently a part of it and will not chip away in service.

The stain works well and quickly, gives a dry durable surface without injury to the sole and has met with favorable reception by shoe manufacturers and repair men.

FRANCE'S IMPORTATIONS DURING THE YEAR 1923 OF AMERICAN-made leather cloth or artificial leather reached the high figure of $645,410, as compared with $441,246 in 1922.

Annual Meeting of the Rubber Association of Canada

Representatives of 22 rubber companies attended the Fourth Annual Meeting of the Rubber Association of Canada, which was held during the afternoon and evening of February 29, 1924, at the Mount Royal Hotel, Montreal, Canada.

The afternoon business meeting, which began at three o'clock, was presided over by C. N. Candee, president of the association. The chief address on this occasion was made by G. R. Crowther, of London, England, who, as a representative of the British Rubber Growers' Association, spoke in favor of cooperative publicity to increase the use of rubber.

W. H. Miner,
President-Elect

In the evening and following the dinner the leading addresses were made by the Honorable Walter Mitchell, M.P., the Honorable and Reverend Canon Cody, and W. O. Rutherford, president of the Rubber Association of America. In these addresses attention was called to the fact that the past year had been a prosperous one for the Canadian rubber industry, no failure of a rubber manufacturer having been reported, while there were now in that country 34 rubber factories in active operation. Crude rubber to the value of almost $30,000,000 had been purchased by the Canadian industry during 1923; there was a substantial increase in the value of both domestic and export sales of Canadian fabricated rubber and a decrease in imports of rubber manufactures; while during the year in question 1,909,000 tires had been produced, an increase of 900,000 over the output in the year 1921.

The healthy condition of the Canadian industry was also commented upon by Mr. Rutherford, who offered the congratulations of the Rubber Association of America, remarking that in the United States also the prospects for 1924 for the rubber industry gave many indications for encouragement.

At the afternoon session the following board of directors was elected for the present year:

H. E. BeSaw, Firestone Tire & Rubber Co., Ltd., Hamilton, Ontario.

J. D. Hathaway, Northern Electric Co., Ltd., Montreal, Quebec.

Joseph O'Mara, K. & S. Tire & Rubber Co., Ltd., Toronto, Ontario.

F. E. Partridge, F. E. Partridge Rubber Co., Ltd., Guelph, Ontario.

John Westren, Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ontario.

W. B. Wiegand, Ames Holden Tire & Rubber Co., Ltd., Kitchener, Ontario.

W. H. Miner, Miner Rubber Co., Ltd., Montreal, Quebec.

C. H. Carlisle, (ex-officio), Goodyear Tire & Rubber Co., of Canada, Ltd., Toronto, Ontario.

W. A. Eden, (ex-officio), Canadian Consolidated Rubber Co., Ltd., Montreal, Quebec.

C. N. Candee, (ex-officio), Gutta Percha & Rubber, Ltd., Toronto, Ontario.

C. N. Candee,
Retiring President

The following officers were elected by the board of directors for 1924:

President, W. H. Miner.
Vice-President, F. E. Partridge.
Treasurer, John Westren.
Assistant Treasurer, Joseph O'Mara.
Manager and Secretary, A. B. Hannay.

Fourth Annual Dinner of the Rubber Association of Canada, Held February 29, 1924, at the Mount Royal Hotel, Montreal, Quebec, Canada

A. L. Viles, general manager of The Rubber Association of America attended the annual banquet of the Canadian Rubber Manufacturers' Association.

Companies incorporated in this week's *Canada Gazette* to carry on business in the Dominion of Canada include among others The B. F. Goodrich Rubber Co., Toronto, Ontario, capitalized at $50,000.

The Rubber Trade in Europe

Great Britain

NOTWITHSTANDING the persistence of strikes, which apparently may result in definite wage increases after two years of decline, there is a distinctly more hopeful tone now in evidence in British financial and industrial circles. Recent compilations of statistical data show clearly that business, as a whole, has improved during 1923, that a considerable recovery has followed the collapse of 1920, and that, in general, less erratic conditions have been brought about in the rubber industry. For example, the coal trade in 1923 is said to have had next to the biggest year on record; the iron and steel output showed a 50 per cent increase over the monthly average in 1922; while the lumber trade has also been distinctly satisfactory. The real significance, however, of the various statistics covering three years' operations by leading industries lies in the steady and consistent progress which has been achieved.

Prospects for the Rubber Industry

Meanwhile signs of encouragement for the rubber industry are not lacking. According to *The Financier*: "The crude rubber position is becoming increasingly interesting. Larger consumption, coupled with a modified supply under the export restriction enactment, has brought about a marked change for the better within the last twelve months, and in normal circumstances the end of 1924 will witness further improvement in the statistical position.

"As to the stocks in the hands of American dealers and manufacturers at the end of 1923, the total of 77,000 tons compares with no less than 94,700 tons on December 31, 1922. From the standpoint of producers this is the best showing for three years past." Commenting upon the important position of America the writer further states:

"The present hand-to-mouth buying of rubber by the large consumers of the United States is, however, contingent upon large free supplies and a poor competitive demand, and the evidence is that these favorable conditions are already on the verge of disappearance. As shown above, the free supplies of the raw product have been quite substantially reduced within the last twelve months, and everything points to a continuance of the process this year."

Another favorable indication for the industry is the increasing trade in waste and reclaimed rubber. The United Kingdom in 1922 imported 633,800 pounds of such material, valued at £8,946, while in 1923 the total purchase was estimated as being 2,110,400 pounds, valued at £30,799. Exports in 1923 of waste and reclaimed rubber totaled 7,991,000 pounds, valued at £90,798, as compared with 4,985,700 pounds in 1921 and 4,038,000 pounds in 1922, valued at £103,901 and £62,737 respectively.

As representing the development in general of Great Britain's rubber industry, it is only necessary to recall the fact that in 1921 England exported to the United States 45,930,900 pounds of crude rubber, valued at £1,998,700, the total rising in 1922 to 50,424,300 pounds, valued at £2,021,331. During 1923, however, the amount was estimated at 68,790,000 pounds, while the value, at £4,676,843, was more than double that for 1922!

Finally, England's total exports, colonial and foreign, of unmanufactured rubber were: in 1921, 96,717,900 pounds, valued at £4,066,405; in 1922, 119,203,500 pounds, valued at £4,764,482; the advance continuing into 1923 at 152,603,100 pounds, valued at £9,951,102, again more than doubling the value for the year preceding. With probable increasing consumption by other countries, notably France and Italy, Germany and Russia, the present year also may witness great advances in the rubber industry of England and her colonies.

Institution of the Rubber Industry

At the meeting on February 18 of the Manchester Section of the Institution of the Rubber Industry, H. A. Bennett, immediate past president of the Motor Traders' Association, read an interesting paper on "The Distribution of Tires."

In his opening statement Mr. Bennett informed his hearers that his object in speaking to them was, first, to give some idea of the work the Institute of Motor Traders was doing; and, secondly, to express some revolutionary views on a much debated subject—the distribution of tires. In the first place, a code of trading ethics should, in Mr. Bennett's opinion, be formulated, which would govern relationships between all in the industry, including the makers of tires. At present there was too much profiteering in the trade, too little accuracy in advertising, or truthfulness on the part of salesmen. Cost systems should be developed which would secure just and fair profit percentages, while there was still much to be desired in the relationships between manufacturer and trader or between the trader and the purchasing public.

But cost systems, no matter how carefully prepared, will prove unproductive unless the manufacturer first learns how to push his sales. The present system of tire distribution, with its unfair and illogical competition, is, according to Mr. Bennett, entirely wrong, while if the situation in pneumatic tire distribution is bad, that of solid tire service is worse.

In offering some constructive criticism, that his suggestions might not appear entirely destructive, Mr. Bennett proposed that first of all an attempt should be made to abolish unfair competition and recognize the retail trader as the best channel for supply. The next step should be to abolish, or at least reduce, sale or return stocks, while the third reform should be the increase of discounts to the trader and the abolition of discounts to all other so-called privileged persons.

In closing Mr. Bennett said: "You must find out the easiest and the most economic way of distributing your wares. You must make a better article than your foreign competitors, and at a lower price. You must give a service equal to your competitors; you must give equal discounts; and you cannot expect the average trader to sell your tires if he can get a better margin of discount from a foreign tire manufacturer. Why not get together and talk the subject over as I have suggested? Cut out the past, get right down to facts, and see if what I have told you is not true. Do this and I assure you the retail trader will support you to the full."

Rubber Section at British Empire Exhibition

One of the most attractive divisions at the British Empire Exhibition, which will be opened April 23 at Wembley by the Duke of York, will be the rubber manufacturing section, organized by the India Rubber Manufacturers' Association, Limited, of Manchester. The display will be arranged immediately adjacent to the eastern entrance to the Palace of Industry, and the exhibit will be entered through an imposing portico flanked by rubber trees. About 6,000 square feet of space will be occupied by the rubber section.

Some thirteen special exhibits by leading manufacturers have been planned for the rubber manufacturing section; approximately ten companies will be represented in the motor and cycle section; thirteen in the electrical engineering section; and eleven in the general engineering section. The tire industry, the waterproofing industry, the production of sporting goods, surgical goods, rubber footwear, rubber articles for the home, rubber flooring, tiling, as well as miscellaneous lines, will all be well represented in this exhibition which, continuing until October, will indicate not only to the people of Great Britain but also to foreign countries some-

thing of the remarkable growth in the past of an industry which apparently has even greater possibilities for development in the future.

British Electric Wire and Cable Industry Progressing

The electrical engineering industry of Great Britain proved to be last year the most prosperous of any branch of British engineering. New orders for apparatus have been advancing steadily during the last 18 months, while the heavy apparatus branch of the electrical industry received orders in 1923 amounting to nearly 100 per cent more than for 1922.

Improvement also in the electric wire and cable situation is shown by the following figures: Exports from Great Britain of rubber insulated electric wires and cables (not being telegraph or telephone wires or cables) advanced from a value in 1922 of £658,934 to £1,019,351 in 1923. Exports of telegraph and telephone wires and cables (not being submarine cables) rose from £521,753 in 1922 to £792,489 in 1923, while the values of exports of submarine telephone and telegraph cables increased from £339,427 in 1922 to £616,396 in 1923.

Dunlop Price Reductions

New price lists, as issued by the Dunlop Rubber Co., Limited, show important reductions in straight-side tires of 4, 4½, 5, 6, 7, and 8-inch cross-section, this especially applying to the giant sizes. The company also announces that the price of its "Aercore" tire has been considerably lowered, although figures for the solid super-cushion type, to be known as the Dunlop resilient solid tire, remain unchanged.

New Uses for Rubber

An interesting paper on "New Uses for Rubber" was read by P. J. Burgess, chairman of the Rubber Growers' Association, at a recent gathering at the Royal Society of Arts. Mr. Burgess had prepared a very comprehensive exhibit of articles made of crêpe rubber and referred in his paper to some of the recent patents which had superseded some of the old methods of rubber manufacture. Particular mention was made of some of the direct uses of latex, and the various methods of vulcanizing latex.

Cowper Paving Block

Another type of rubber paving block has been recently patented which in its construction, it is claimed, has solved some problems heretofore met. The Cowper block interlocks with adjacent blocks on all sides, thus preventing the passing of water to the base, which is composed of a softer compound. The center layer, or core, of the block is very hard, and as these layers impinge upon the adjacent blocks, there is no possibility of "creeping," while the soft layer at the base tends to absorb shocks and removes any tendency toward displacement.

British Notes

A Foreign Sample Exhibition was held at the Leicester Chamber of Commerce on February 20 and 21. Some of the leading displays included samples of elastic, particularly elastic webbing, suspenders, braces, arm bands, etc., the countries of manufacture being Argentina, Brazil, the United States, France, Italy, and Germany.

In order to suit the convenience of those attending the British Empire Exhibition, the British Industries Fair will also be held in London, the date of opening being on April 28, a few days later than the Exhibition date. Among the displays at the fair, which will also be held in Birmingham from May 12 to 23, will be rubber goods for both industrial and household purposes.

W. H. Mackusick has returned to England to take over the general management of the Northwestern Rubber Co., of Litherland. This Liverpool organization has the distinction of being the first in England to begin operations in its particular line of business.

A branch office has been recently established at 39 Lombard street, London, E. C. 3, by Meyer, Measor & Burkill, Limited, rubber dealers, with main offices at Singapore. Announcement is also made of the relinquishment by W. G. Pratt & Co., Limited, of the agency of the Singapore house.

Austria

The *Gummi-Zeitung* publishes an interesting review of the Austrian rubber industry which was hard hit by the disruption of the former Austria-Hungarian Empire and the subsequent economic decay. There was a lack of fuel, solvent, crude rubber and textiles that frequently caused total cessation of operations. In fact, it was not until the latter half of 1919 that Austria was able to replenish her stocks of raw rubber that had been depleted during the war. However, gradually the difficulties of obtaining supplies were overcome and a limited market was developed in the Succession States for Austrian manufactures.

Later there was the difficulty of obtaining fuel, which was not overcome until the second half of 1921. In that same year, the krone for a time depreciated rapidly so that manufacturers and dealers indulged in a general and total clearance sale of rubber goods. As a result, wages and costs soared, stocks were exhausted and when finally the gold base calculation was introduced Austria was unable to export, while on the one hand local demand decreased and on the other foreign exporting countries, particularly Germany, flooded the country with their products.

No improvement worth considering took place in 1922; the Germans continued dumping goods on the Austrian market, due to the rapid decline of the mark, and the duty of 10-15 per cent afforded the Austrian industry no protection. In addition, local freights were considerably increased and consequently many employes had to be dismissed and working hours cut down in most factories.

In 1923, in so far as can be judged from incomplete reports, the situation did take a turn for the better. Official statistics show that Austria's imports and exports were as follows:

	Imports, Crude Rubber, Waste and Factice		Imports, Manufactured Goods		Exports Manufactured Goods	
	Quintals[2]	Gold Kronen	Quintals[2]	Gold Kronen[3]	Quintals[2]	Gold Kronen[3]
1920....	15,508	4,610,000	6,421	7,099,000	16,361	11,850,000
1921....	24,421	4,374,000	6,074	6,458,000	35,101	15,084,000
1922....	23,798	3,921,000	7,067	6,913,000	45,651	27,197,000
1923[1]....	9,592	1,583,000	3,537	3,328,000	18,026	11,426,000
Totals	73,319	14,488,000	23,099	23,798,000	115,139	65,557,000

During the first half of 1923 Austria also imported 174 quintals of rubber thread valued at 118,000 gold kronen.

The business in tires, tubes and solid tires was as follows:

	Imports		Exports	
	Quintals[2]	Gold Kronen[3]	Quintals[2]	Gold Kronen[3]
1920.....	3,920	3,866,000	1,284	1,155,000
1921.....	2,481	2,799,000	1,941	1,596,000
1922.....	2,689	3,052,000	2,323	3,292,000
1923[1].....	1,726	1,959,000	736	1,045,000

[1] First six months only. [2] Quintal = about 220 pounds. [3] Krone = $0.203.

For the first six months of 1923 solid tires were entered separately, imports being 40,800 kilos, value 286,000 kronen against exports 56,700 kilos, value 397,000 gold kronen. Most of the imports came from Germany and the United States and most of the exports went to Poland, Hungary, and Czecho-Slovakia.

Figures for rubber shoes, soles and heels show that in the first half of 1923 imports were 5,000 kilos, value 61,000 gold kronen (from Germany and England), while exports were 480,200 kilos, value 3,745,000 gold kronen. About 25 per cent of these exports went to Poland. In 1920 and 1921 Austria shipped 412,600 kilos and 705,300 kilos respectively, mainly to the neighboring countries.

Exports of toys in 1923 were 323,000 kilos, value 2,591,000 gold kronen, about 50 per cent of which went to England. Imports at the same time were 5,700 kilos, value 46,000 kronen. For

1920 and 1921 the amounts were 101,700 kilos and 470,200 kilos respectively.

At present there are six factories in Austria, giving employment to 9,000 persons. The firms are:

1. Semperit Oesterreichische-Amerikanische Gummiwerke A.-G, Vienna XIII.
2. A branch of the above at Traiskirchen near Vienna.
3. Vereinigte Gummiwaren-Fabriken Harburg-Wien, Wimpassing.
4. Joseph Reithoffer's Söhne, Garsten bei Steyr.
5. Asbest und Gummiwerke Calmon G. m. b. H. Stadlau near Vienna.
6. Josefsthaler Gummi-und Asbestwarenfabrik, G. m. b. H., Josefsthal, near Vienna.

The present home consumption in Austria is not sufficient to fully employ one of the big factories. Consequently the Austrian rubber industry is chiefly an export industry. Recognizing the difficulty of the situation, all the above mentioned factories have been placed under the direction of two of the biggest Austrian financial institutes, namely the Wiener Bankverein and the Niederösterreichische Escomptegesellschaft, Vienna. In this way manufacturing and sales costs have been cut to a minimum, while cooperative purchases of raw materials and equipment effect great savings. But the biggest economies are effected by the system of dividing the work according to which the factory best equipped for a certain article gets the orders for that article.

The writer of the above, while clearly holding up this system for emulation by the Germans, closes with the prophecy that Austrian competition will be leveled at Germany, although German factories outnumber the Austrian something like 50 to 1. The fact that the Austrian industry is organized and the German is not would prove a deciding factor.

Denmark

Denmark imported 364,800 kilos of raw rubber in 1923 against 1,362 kilos in 1922. Imports of manufactured rubber included the following: footwear, 201,600 kilos against 140,100 kilos; bicycle tires, 478,500 kilos, against 438,800 kilos; automobile tires, 957,000 kilos instead of 738,200 kilos; cycle tubes combined with fabric, 80,500 kilos against 96,600 kilos; automobile tubes 134,000 kilos, instead of 41,700 kilos; hose, 89,100 kilos, against 77,300 kilos; cycle tubes without fabric, 18,100 kilos against 3,300 kilos; other rubber goods with fabric, 169,900 kilos against 219,500 kilos; other rubber goods, 210,400 kilos against 177,100 kilos.

Finland

Although the Finska Gummifabriks A. B., of Helsingfors, manufactures all kinds of rubber footwear except rubber boots, the local demand is still largely met by importations, the amounts which came into the country in 1921 and 1922 having been 101,303 kilos and 178,877 kilos respectively. Most of this came from Germany. Nevertheless there would seem to be a good market for American overshoes as practically all rubber boots sold here come from the United States and are considered the best obtainable.

Foreign-make rubbers are of the American type while the Finnish make is of the Russian style, strong, durable, with a stiff heel. However, the American style is also being manufactured at present.

Germany

Recent modifications of the interallied tariff for the occupied territory have not at all met with German approval. In the first place, all goods, including those of German origin, come under the terms of the tariff. Up to the present, goods of German origin were subject to only 25 per cent of the full duty. All goods shipped to foreign countries are subject to an export tax, which for most kinds of rubber goods amounts to 6 per cent *ad valorem*, besides a surtax of 3 per cent *ad valorem;* on imports from foreign countries there is a surtax of 1 per cent *ad valorem* besides the regular import duty. Exports to the rest of Germany pay only the export tax, and imports from there to the occupied territory pay only the regular duty.

It is claimed that the new measures completely obstruct trade between the occupied and unoccupied territories, which is not only harmful to the industries in the latter, but also to those in the former parts.

Again, the rates of the interallied tariff are in many cases considerably lower than those of the German tariff; furthermore, foreign goods which have paid the interallied duty may pass the borders of the occupied territory into the rest of Germany without having to pay any other tax, so that a new "Hole in the West" has developed which will seriously affect the German rubber industries.

It is held that the new tariff favors France and Belgium to the detriment of the import business of the unoccupied territory that usually traded over borders other than those of the West, and to the German Treasury, which sees its revenue from import taxes reduced. On the most important rubber goods the interallied rates and the existing German duties compare as follows: Threads, 10 to 60 gold marks per hundred kilos against 20 to 120 gold marks; inner tubes, 120 against 180 gold marks; hose, 80 against 120; wagon-covers, 60 against 90; rubber footwear, 140 to 200 against 210 to 300 gold marks; tires, 120 gold marks as against 360 gold marks; rubber matting, 60 against 120 gold marks.

The Excelsior Company of Hannover

One of the leading rubber manufacturers in Germany is the Excelsior Company of Hannover. Before the war the firm employed about 3,000 workmen; at present some 3,500 workers are occupied in making the various specialties of the firm, chief among which are pneumatic and solid tires, rubber combs, sponges, toys, rubber heels.

Although the company is one of the principal German tire manufacturers, it has not been an important exporter of this item. However, it exports considerable quantities of rubber combs; in fact it is said that the three German companies, Excelsior, Heinrich Traun & Sons, and the New York-Hamburger Gummiwarenfabrik, supply about half the rubber combs sold on the world's markets. Sponges and toys also figure prominently among Excelsior exports, most of the toys going to England and the United States.

This company was affected by business conditions that prevailed up to a little while ago. Recently there has been some improvement in the local industries and the Excelsior company is now on a 48-hour week. The production of bicycle tires is 1,500 daily at present (February), but this is expected to be at the rate of 5,000 daily in March; likewise it is hoped to increase the present daily output of rubber heels amounting to 65,000 pieces to 120,000 at the end of the month.

The company is making shoes, the lower parts of which are entirely of rubber while the uppers are of cloth. These are sold only in Holland, where there seems to be a good market for the product.

Sweden

According to dealers' estimates, more than 25,000 pairs of surgeons' rubber gloves were sold in Sweden in 1923. These gloves are all imported, chiefly from Germany, since the article is not manufactured in Sweden, attempts to do so having failed due to foreign competition. The leading German makes sell for the equivalent of 34 cents per pair, while the most popular American brand is sold to hospitals for about 67 American cents. Despite the difference in price, it is said that dealers are turning more and more to American goods owing to the unreliability of Germany. Stockholm and Göteborg are practically the only distributing points for rubber gloves.

The Rubber Trade in the Far East

By Our Regular Correspondent

Malaya

Restriction Modified

NEW restriction rules based on the recommendations of the Central Committee as adopted by the Secretary of State for the Colonies came into effect on February 1, 1924.

Instead of the Duncan scale the following scale is to be adhered to in assessing the standard production of holdings over 25 acres in area: On areas planted in 1919, 60 pounds per acre; areas planted in 1918, 180 pounds per acre; 1917, 240 pounds per acre; 1916 and previously, 300 pounds per acre, all subject to these provisions: (1) Rubber planted in 1919 shall be assessed only if the Assessment Committee is satisfied that 60 per cent of the trees are of tappable size. (2) Areas, the trees on which are burnt out or abandoned, or otherwise unfit for tapping shall not be assessed. (3) If the trees on a holding are incapable of producing the amount of rubber allowed under the scale, this may be varied.

Owners who claim that their holdings can produce more rubber than the scale must support their claim by records of actual production of their estates during any twelve consecutive months after January 1, 1919, or in the case of newly opened areas, any consecutive six months. Assessment is to be based on actual or estimated yield obtainable by a system of tapping which does not exceed one cut on one-fourth of the circumference daily, or its equivalent, and permits a minimum of six years for first bark renewal and eight years for second and subsequent renewals. In any case, the total standard production of an estate is not to exceed 400 pounds per acre of mature rubber and proportionately less for younger rubber. For estates of 25 acres and under, the maximum standard rate is 320 pounds per acre of mature rubber, that is, rubber measuring 18 inches in girth at three feet from the ground.

These new rulings are calculated to give some benefit to the young producer and at the same time to correct conditions whereby many of the older estates profited unfairly due to assessments on abnormally high yields obtained by excessive tapping; many of these old estates were assessed at over 500 pounds per acre. The position of the young producer and of the small holdings has now been reversed, for the exportable allowance of the former has been increased from 192 to 240 pounds, while the allowance of the latter has been reduced from 240 pounds to 192 pounds.

Naturally, these new rulings do not carry away the approval of everyone. On the whole, however, the opinion seems to be that they are equitable. As to their effect on restriction, one optimist figures out that production will be cut by 40,000 tons; others have forecast half that amount. That there will be some reduction seems to be the general feeling, and of course it is expected that this will be agreeably reflected in the market price.

There seems to be little reason for over-optimistic speculations. Certainly on the basis of 400 pounds per acre the gross output of the area in bearing in Malaya (given as 1,316,831 acres in 1921) becomes some 235,000 tons, which is about 39,000 tons less than the standard production figure of 274,000 tons. But since 1921 a very considerable area must have reached the tapping stage, for in that year there were 909,405 acres planted but not in bearing, besides the 1,316,831 acres of productive rubber, and this will certainly tend to minimize the effect of the new measures. Then the young producers will have their assessments raised which will further increase the total output. Finally if, as has been repeatedly claimed, smuggling is actually being indulged in on a large scale, one is inclined to the conclusion that there will be but little change in the aspect of affairs.

All this refers to Malaya only, but when we take into consideration also the Dutch Indies and Ceylon, uneasiness rather than optimism seems to be justified. The *Straits Times* figures out that within a year Malaya will probably have 2,000,000 acres in bearing which at an average of 350 pounds per acre gives 312,500 tons as full production. The bearing areas in Ceylon and the Dutch colonies are rapidly expanding and the capacity in the next year or two in these places may be expected to be 250,000 tons. So that within a year or so, the East will be capable of producing 560,000 tons of rubber and if the world situation does not improve rapidly and soon lead to greater consumption of rubber, it is not pleasant to contemplate what will become of rubber prices.

Under these circumstances, the above paper sees in firm restriction, which might be necessary for five or even ten years, the only salvation of the industry, and it earnestly requests those in authority to see to it that the new measures are properly enforced.

Smuggling

From time to time attention has been called to smuggling and it has been suggested again and again that this is probably going on to a far greater extent than is generally supposed. Certainly, with Sumatra right next door, so to speak, and no proper preventive service in Malaya, there seems to be no reason why those who have shown themselves so astute and energetic in the matter of forging and manipulating coupons should not turn their attention also to smuggling. Circumstances being what they are, this form of defrauding the government can hardly be more dangerous than any other; in fact, it is reasonable to suppose that it even enjoys a certain preference with those living on the coast.

At one time the government seemed to be willing to take this seriously and certificates of origin were going to be issued as a means of checking the evil. However, the Singapore Chambers of Commerce intervened and the matter was dropped. This has been a sore spot with the *Straits Times*, which, although firmly convinced that the Dutch have been butchering their trees to profit by present prices, has steadily maintained that much of the rubber shipped from the Dutch colonies to Singapore for reexportation was in reality Malayan rubber smuggled to Dutch territory and then sent back to Malaya as foreign rubber. At present it is again hot on the trail of the smuggler, urged thereto by what seems to be confirmation of its suspicions. It learns from a reliable source that from a certain point an average of 200 piculs per day is being smuggled out, which would be 4,000 tons a year from this one place alone. This leads to an examination of imports of foreign rubber. In the year before restriction, such imports came to 30,405 tons; in the first year of restriction it rose to 62,042 tons, an increase of more than 100 per cent. For the first quarter of the second restriction year foreign rubber shipments amounted to 23,000 tons, which is at the rate of 92,000 tons a year. "Is this increase natural?" queries our contemporary.

The effect of this foreign rubber is illustrated by the following comparison with Malayan exports. In the year before restriction Malaya exported 213,975 tons of its own rubber. In the first year under restriction it exported 186,239 tons, a decrease of 27,736 tons. But at the same time the increase of foreign was greater by 3,901 tons than the decrease of Malayan. If during the current year net Malayan exports are the same as last year and foreign rises to 90,000 tons, the total exports will show an increase of 28,000 tons more than last year and the foreign will exceed Malayan saving by about 33,000 tons.

Netherlands East Indies

Cooperation With British Urged

The tendency on the part of local planters to side with the British in the matter of restriction seems to be growing and curiously enough one of the chief arguments of anti-restriction, namely native rubber, is considered by the opposite party an equally strong reason for union with the British. Extensive publicity is being given an article on this subject, signed "Molensteen."

The writer urges cooperation with the British, but points out that in that case both the Dutch and Malayan Governments would have to work hand in hand to enforce restriction on the natives, too. He emphasizes the fact that the adherent of the policy of survival of the fittest would live to see the natives the survivors if the Dutch did not also restrict; for European cultures have never been able to supplant the native in spite of the primitive methods employed in the latter, except under very special circumstances over which the natives had no control.

The natives have the finest lands, which are annually enriched by the deposits from the neighboring rivers, so that although the trees are crowded together they do not appear to suffer and at 14 years attain a girth of 1.75 to 2.25 meters at three feet from the ground. According to the writer, the natives have continued to plant up new areas, particularly in the last year, during which millions of seeds and seedlings have been set out.

The natives are not subject to the same terms regarding ownership of land as are the Europeans. It is also claimed that they do not pay a tithe of the taxes that they should pay and here both governments should bring about a change. A tax on the exports of native rubber should be levied, so high that the selling price could not be lower than that obtainable by the cooperation of all European producers here and in the English colonies.

Only by uniting against the native planter and thus gaining control over the output will the European rubber producers in the East be able to throw off from their necks the rope the American consumers have cast over them and eventually do some rope-throwing themselves.

Last month mention was made in these columns of the opinions of Dr. Rutgers, Director of Agriculture, on the subject of native rubber. Dr. Rutgers, too, considered the expansion of native cultivation to be a menace to the Europeans, but he expressed his pleasure that the times were past when the natives could be forbidden to extend an agricultural industry which was very profitable to them. This viewpoint has aroused a good deal of indignation here in certain circles as betraying insufficient interest in the welfare of the European industry, an attitude one did not expect to find in a man occupying Dr. Rutgers' position.

All this, naturally, is encouraging for restriction, but perhaps the most significant proof of the feelings of a portion at least of the Dutch planters is the fact that recent negotiations between Malayan representatives and Dutch planters appear to have met with success.

At a meeting at Djackja, arranged by the association of producers, it was unanimously decided that the interests of rubber companies in Java were closely allied with those in other parts of the world and that it was necessary to have the price of rubber stabilized at not less than the cost of production on estates in the Orient; further, that the governments of the producing companies should assist in a plan of cooperation and finally that prompt inquiry should be made into the matter of the extent and possibilities of native grown rubber in the Dutch colonies.

Of course, this success does not yet mean that restriction is an accepted fact here. Before restriction was finally introduced into Malaya and Ceylon, the Malayan delegates were no less successful at certain places, but in the end they returned to Malaya defeated. It should be borne in mind that, whatever planters in Java and Sumatra may think, the decision rests with the owners and directors in Holland, and some of these appear to be as firmly opposed to restriction as ever.

English Demand for Rubber Estates

It is learned that there is a notable demand for estates, particularly in the Malang district. Most of the demand seems to come from English capital, chiefly new at that, and the greatest interest is shown in rubber estates. It is thought that restriction and the wrong notions that some English entertain in this connection may have something to do with this activity. As is well known the English have bluntly declared that Dutch estates have been overtapping and have thus obstructed restriction. The suggestion that English producers, elsewhere subject to restriction, are thinking to escape this by buying rubber lands in Java seems to be confirmed by the fact that the interested parties specially stipulate as a condition of purchase that the estates they buy must at least have reached the bearing stage, so that tapping may take place at once.

Sumatra Exports

Preliminary figures show that during 1923 46,929 tons of rubber were exported from the East Coast of Sumatra. From Belawan, Deli (Sumatra), 6,458,040 kilos of latex were exported in the same year against 983,884 kilos the year before. Of the 1923 shipments about 6,000,000 kilos went to America.

Ceylon

Although the new rules regarding the reassessment of standard production do not affect Ceylon, nevertheless much interest is taken in them, as it is possible that an attempt may be made to introduce similar regulations here. Not that Ceylon wants such rulings. On the contrary, any such change would be greeted with vigorous protests. Here in Ceylon it is claimed that the Malay regulations "vitiate the very principles of the Stevenson plan, which aimed at a percentage of restriction based on actual production, and substitute an arbitrary figure which will penalize good estates unfairly." Not only this, but there is not a similar reason in Ceylon for such action because when, soon after restriction was enforced, it became apparent that assessments on the bases of production in 1919-1920 were far too liberal owing to a number of reasons—among others that during that period overtapping was rife—steps were immediately taken in Ceylon to correct the situation. Special assessors visited estates and reported the actual production and the exportable maximum was adjusted accordingly. As a result, restriction in Ceylon is in general working smoothly and equitably. Naturally, this being the case, Ceylon does not wish to pay for Malaya's blunders.

EXHIBIT OF R. A. OF A. AT BRUSSELS

The magnitude of the United States rubber industry will be adequately shown by the comprehensive booth of The Rubber Association of America at the Brussels Exhibition now being held at Brussels, Belgium, April 1-16.

Samples of tires, footwear, heels, soles and mechanical rubber goods bearing the R. A. brand only, will be arranged in separate sections, and the statistics for each division may be read from large books printed in English and French. Artistically painted panels will add decorative effect to the exhibit and illustrate the various uses of American rubber products.

Separate sections will be provided for the display of statistics and charts relating to crude rubber, compounding materials, raw cotton and fabrics, used in the industry, while Balopticon pictures of rubber factories will be shown. A life-size Hevea tree being tapped by a native will occupy the center of the pavilion.

A comprehensive booklet entitled, "The Rubber Industry in the United States," and printed in English and French, will be distributed. The exhibit will be in charge of Elmer Roberts, who will represent the Rubber Association.

"Rubber Machinery," by Henry C. Pearson, should be in the library of every rubber company.

Recent Patents Relating to Rubber

The United States

Issued* February 19, 1924

1,483,949 Anti-rattler for automobile hoods. H. G. Jorgensen, Erie, Pennsylvania.
1,483,957 Pencil eraser. N. T. Trygge, Chicago, Illinois.
1,484,037 Cushion tire. A. H. Ratterree, Charlotte, North Carolina.
1,484,068 Pressure gage. F. H. Hopkins, Somerville, Massachusetts, assignor by mesne assignments to American Schaeffer & Budenburgh Corporation, Brooklyn, New York.
1,484,299 Core for tire casing. J. B. Davies, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio.
1,484,407 Air bag for use in tire manufacture. J. F. Palmer, St. Joseph, Michigan.

Issued* February 26, 1924

1,484,625 Tire tube. T. J. Cooper, Paterson, New Jersey.
1,484,683 Self-filling fountain pen. L. M. Tebbel, Spokane, Washington, assignor to The Parker Pen Co., Janesville, Wisconsin.
1,484,730 Fountain pen. W. W. McDonald, Sioux City, Iowa.
1,484,937 Cushion tire. H. C. Egerton, Ridgwood, New Jersey.
1,484,951 Air tube for tires. T. B. McLeroth, Hadley Wood, England.
1,484,957 Yielding strap for suspenders and the like. E. F. Moser, Warsaw, Indiana.
1,484,994 Tire re-treading core. J. L. Maguire and Lanta C. Weeks, Elkins, West Virginia.
1,485,189 Wringer roll. G. R. Keltie, assignor to American Wringer Co., both of Woonsocket, Rhode Island.
1,485,194 Cushion heel. W. T. McLaughlin, Boston, Massachusetts.
1,485,265 Tire tube. A. E. Henderson, Toronto, Ontario, Canada.
1,485,299 Tire. M. L. Scott, Pecan Gap, Texas.

Issued* March 4, 1924

1,485,573 Tire. B. C. Swinehart, Akron, Ohio.
1,485,577 Toy balloon. A. P. Witten, Akron, Ohio.
1,485,977 Cushion wheel. G. A. Gillen, Jersey City, New Jersey, assignor to Gillen Laboratories Corporation, New York, New York.
1,486,055 Inner tube. J. F. Stranahan, Milwaukee, Wisconsin, and J. F. Mora, Oakland, California.
1,486,106 Solid tire. F. Palombo, Bedford, Ohio.

Issued* March 11, 1924

1,486,138 Elastic tape shoe fastener. A. C. Hanson, Fort Wayne, Indiana.
1,486,182 Milking machine teat cup. F. S. Frost, assignor to Sears, Roebuck & Co., both of Chicago, Illinois.
1,486,183 Milking machine teat cup. F. S. Frost, assignor to Sears, Roebuck & Co., both of Chicago, Illinois.
1,486,290 Nasal mask. A. Littauer, New York, N. Y.
1,486,601 Cushion tire. M. C. Overman, New York, N. Y.
1,486,602 Cushion tire. M. C Overman, New York, N. Y.
1,486,603 Cushion tire. M. C. Overman, New York, N. Y.
1,486,634 Anti-skid device employing cushion blocks. W. Caskey, Walkerville, Michigan.
1,486,779 Girdle brassiere. C. Mayer, Chicago, Illinois.

The Dominion of Canada

Granted February 26, 1924

237,969 Vacuum cup. R. S. Thompson and C. F. Dorscher, both of New York, N. Y.
237,971 Tire valve. R. G. Old and F. W. Hill, both of Folkstone, Kent, England.
238,127 Air bag. R. S. Burdette, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio, U. S. A.

Granted March 4, 1924

238,271 Tire vulcanizer. E. J. Rohne, Minneapolis, Minnesota, U. S. A.
238,297 Wear resisting and non-slipping surface. W. P. Whitehouse, Gravesend, Kent, England.
238,325 Inner tube. C. Macbeth, Birmingham, Warwick, assignor to The Dunlop Rubber Co., Ltd., Regent's Park, London, both in England.
238,326 Valve base patch for tire curing tubes. T. A. Burns, assignor to The Dunlop Tire & Rubber Co., Ltd., both of Toronto, Ontario, Canada.
238,329 Tire. H. K. Raymond, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y., both in U. S. A.
238,330 Cushion tire. A. A. Robb, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y., both in the U. S. A.
238,331 Air bag. R. S. Burdette, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio, U. S. A.

Granted March 11, 1924

238,404 Football tee with pneumatic base. N. H. Nelson and H. M. Nelson, Minneapolis, Minnesota, U. S. A.
238,481 Bathing suit with air tube support. J. H. Rathman, Wichita, Kansas, U. S. A.
238,599 Nursing bottle. J. May and John McPhee, assignor of one-half interest, both of Portland, Oregon, U. S. A.
238,605 Rubber brush. C. A. Don, London W. C. 1, England, assignor to F. M. Cousineau, Toronto, Ontario.

The United Kingdom

Published February 6, 1924

208,224 Surgical abdominal belt. A. E. Wardroper, 98 Victoria street, Westminster.
208,263 Life-saving device. H. Morley, Pinewood, Broad Road, Sale, near Manchester.
208,288 Elastic brassiere. H. T. Sherwood, 8 Well street, Jewin street, London.
208,290 Resilient saddle top for cycles. E. Lycett, Bromley street, Birmingham.
208,329 Packing for pistons. G. von Schweinitz, 3 Olgastrasse, Munchen, Germany.
208,337 Armored tire. J. B. Gould, 20 Manor Court Road, Hanwell, London.
208,338 Power transmitting mechanism for motorcycles, employing rubber cushions. Burman & Sons, Ltd., Lee Bank Works, Ryland Road, and T. H. Briggs, 5 Varna Road, Edgbaston, both in Birmingham.
208,376 Tube union with rubber sleeve. N. L. Bright, 47 Bassett Road, North Kensington, London.
208,383 Apparatus for vulcanizing long lengths of rubber. E. C. R. Marks, 57 Lincoln's Inn Fields, London. (Fisk Rubber Co., Chicopee Falls, Massachusetts, U. S. A.)
208,393 Cushion wheel. C. J. M. Mancor, 13 Cobden Crescent, Edinburgh.
208,428 Scoring device with rubber type numerals, for games. J. K. Corsar, 9 Cecil Mansions, Western Parade, Southsea, Hampshire.
208,446 Rubber-covered tumbler holders. C. Freakes, 19 Woodbourne avenue, Streatham, London.

Published February 13, 1924

208,499 Tethered golf ball. W. H. Aston, 46 Eagle Wharf Road, New North Road, London.
208,512 Rubber sole and heel. Naamlooze Vennootschap Verenigde Nederlandsche Rubberfabrieken, Doorwerth, near Arnhem, Holland.
208,532 Waterproof baby pants. J. Stein, 520 Broadway, New York, N. Y., U. S. A.
208,581 Adaptor for pneumatic tire valves. W. Turner, 43 Brook Road, Meersbrook, Sheffield.
208,603 Rubber mats, stair pads, etc. T. Gare, The End House, Green Lane, and J. Torkington, 3 Willard street, both in Hazel Grove, Stockport.
208,654 Mudguard rotating with wheel. J. R. Stubley, 17 Coronation street, Oldham.
208,658 Mudguard rotating with wheel. E. Hallam and T. W. Hallam, 29 Slade Lane, Longsight, Manchester.
208,668 Inner tube. J. Viven, Villefranche de Rouergue, Aveyron, France.
208,671 Wrappers for tires, etc. T. Morley, Jesmond avenue, Blackpool.
208,679 Rubber paving blocks. G. O. Case, 7 Idol Lane, Great Tower street, and Novocretes, Ltd., 1 Regent street, both in London.
208,697 Sheet-rubber suction plate for lifting articles. Manufactures des Glaces et Produits Chimiques de St.-Gobain, Chauny, et Cirey, 1—bis, Place des Saussaies, Paris.

Published February 20, 1924

208,789 Crêpe rubber and canvas sole and heel. S. R. Rogers, 41 Eastcheap, London.
208,807 Double boat valve with rubber washer. W. T. Warne, 24 Great Sutton street, Finsbury, London.
208,840 Rubber flooring and paving slabs. A. N. Campbell, 5 Regent street, Pall Mall, London.
208,885 Rubber supports for windshields, etc. E. C. R. Marks, 57 Lincoln's Inn Fields, London.
208,910 Rubber coated signboards. L. F. W. Davidson, Huntly Lodge, Huntly, Aberdeenshire.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

Chemical Patents will be found on page 448, Machinery and Process Patents on Page 454-455

Published February 27, 1924

209,088 Cushion heel. G. E. Warren, Swampscott, Massachusetts, assignor to United Shoe Machinery Corporation, 205 Lincoln street, Boston, Massachusetts, both in the U. S. A.

209,123 Low pressure tire. E. B. Killen, 27 Queen Victoria street, London.

209,130 Hard rubber portable track wheel. J. T. Dreyer, War Office Buildings, Whitehall, London.

209,177 Sheet rubber jug. J. Gee, 52 West End Lane, London.

209,216 Laminated sheet rubber bottle stopper. M. M. Dessau, 14 Mincing Lane, London.

209,236 Armored tire or tube. W. T. Caddy, 205 Richmond Road, Kingston-on-Thames, Surrey.

209,269 Elastic bandage. C. E. Edwards, 22 Down street, Mayfair, London.

209,275 Rubber cushion for billiard tables. F. Reddaway, Cheltenham street, Pendleton, Manchester.

209,284 Nipple for infants' nursing bottle. W. R. Jamieson, 34 Hanover street, Liverpool.

209,291 Combination leather, rubber and metal sole for tennis shoes. B. Hope, The Briars, Newbury, Berkshire, and Brown & Sons, (Wellingborough) Ltd., Wellingborough, Northamptonshire.

209,302 Studded tire. S. A. Wallis, West Villa, Derby Road, Long Eaton, Derbyshire.

209,314 Horseshoe with non-slip rubber pad. F. J. Cheadle, Swynnerton, near Stone, Staffordshire.

209,315 Detachable rubber heel. E. A. Pickering, 14 Buckingham street, Adelphi, Strand, London.

209,326 Rubber revolving mudguard. H. Bungay, 13 Great Brunswick street, Dublin.

209,365 Elastic heel grip. T. Dennison, Annaville, Park Road, and D. Kernohan, 55 Ravenhill road, both in Belfast.

209,370 Spring wheel and tire. M. Bailly, 69 Rue Erlanger, Paris, France.

209,393 Gas-mask lenses supported by rubber washer. Mine Safety Appliances Co., Chamber of Commerce Building, Pittsburgh, Pennsylvania, assignees of F. A. Logan, Edgewood Arsenal, Maryland, both in the U. S. A.

209,394 Fabric for single tube tires. M. A. Wolber, Soissons, Aisne, France, assignee of P. Nivet, La Grave, near Luxe, Charente, France.

Germany

Patents Issued With Dates of Issue

390,629 (November 7, 1922). Syringe. Antonio Zagoreo, Rome, Italy; represented by E. Hoffmann, Berlin, S. W. 68.

390,630 (August 5, 1922). Medicinal syringe. Friedrich C. Beck, Winterthur, Schweiz.

390,909 (October 21, 1922). Rubber sole. Mitteldeutsche Gummiwarenfabrik. Louis Peter A. G., Frankfurt-am-Main.

391,421 (January 26, 1923). Cellular pneumatic tire. McLeroth Pneumatic Tyre Syndicate, Limited, London; represented by F. Schwenterley, Berlin, S. W. 11.

392,017 (March 19, 1922). Sponge rubber device for making soapsuds. Eruno Lindemann, Dovenfleth 19-21, Hamburg.

Design Patents Issued, With Dates of Issue

862,100 (October 22, 1923). Screw-on holder for rubber heels. Heinrich Schwind, Friedenstrasse 8, Würzburg.

862,116 (November 29, 1923). Rubber heel. Gustav Milse, Häfen 69, Bremen.

862,389 (November 30, 1923). Sports shoe with rubber heel. Curt Geissler, Zeitz.

862,516 (October 22, 1923). Rubber clamp for wooden shoes. Gummiwarenfabrik Baltic Claussen & Lassen, Flensburg.

862,715 (December 13, 1923). Syringe. Hanff & Co., A.-G., Kassel.

862,771 (December 27, 1923). Solid rubber tire. Gummiwarenfabrik A.-G., M. & W. Polack, Merseburg.

863,011 (December 24, 1923). Protective device for pacifiers. Willi Höfling, Ainmillerstrasse 22, Munich.

863,088 (December 22, 1923). Closing device with rubber disk. Continental Caoutchouc-Gutta-Percha Compagnie, Hannover.

863,150 (December 14, 1923). Rubber protector for edges of stair treads. Bremer Gummiwerke Roland, A.-G., Bremen.

863,398 (January 10, 1924). Nipple with soft rubber cap filled with air, fluids or the like. Hatu Gummiwerke Hartmann & Tuphorn, G. m. b. H.

863,426 (June 28, 1923). Rubber skin protective covering for the head. Carl Plaat, Köln-Nippes.

863,427 (June 28, 1923). Pouch or bag of thin sheet rubber. Carl Plaat, Köln-Nippes.

863,505 (January 9, 1924). Air cushion. Karl Himmelreich, Altona.

863,531 (November 15, 1922). Protective cap for wax matches. Continental Caoutchouc-und-Gutta-Percha Compagnie, Hannover.

863,775 (January 15, 1924). Rubber wedge belting with metal insert. Arnold Schwinke, Ober-Walkersdorf, Post Reichelsdorf bei Nürnberg, and Kurt Schmidt, Vard. Beckschlagerg. 6., Nürnberg.

863,937 (December 10, 1923). Rubber band for Thermos bottles. Martin Ruffert, Hedwigstrasse 6-8, Breslau.

Trade Marks

The United States

Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section 1 (b), are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the latter act, trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

Granted February 19, 1924, Act of February 20, 1905

179,807 Elastex, in blocked letters arranged in a semi-circle—bituminous material for compounding rubber. The Barrett Co., New York, N. Y.

179,808 B. R. T.—bituminous material for compounding rubber. The Barrett Co., New York, N. Y.

179,809 Paramar, in blocked letters arranged in a semi-circle—bituminous material for compounding rubber. The Barrett Co., New York, N. Y.

179,810 Carbonex, in blocked letters arranged in a semi-circle—bituminous material for compounding rubber. The Barrett Co., New York, N. Y.

179,816 Peppy Play Ball, arranged so that the letter P is used only once for the two words beginning with that letter—play balls. Tyer Rubber Co., Andover, Massachusetts.

179,818 Lew Mar, enclosed within an oval outline and with the first letter of each word underscoring the rest of the word—rubber bathing caps and water guards for bathing caps. Lew-Mar Products Co., New York, N. Y.

179,854 Kap Kover, printed one word above the other, and with the initial stroke of the K of the first word extended to form the initial stroke of the K of the second word; the initial stroke of the P in Kap also forms the initial stroke of the K in Kover; the whole enclosed within an oblong border—waterproof covers for hats and caps. Hodgman Rubber Co., Yonkers, New York.

179,858 Within a heart-shaped outline the word Varbag, overlined and underlined by continuations of the V—fountain syringes, hot water bags and water bags of soft rubber, heart-shaped in design, for internal use. Dana C. Poulson, Santa Rosa, California.

179,898 Hydro—fire and garden hose. The Republic Rubber Co., Youngstown, Ohio.

179,910 Dictator—tires, including casings and tubes. International Rubber Co. of America, Anderson, Indiana.

179,920 Tru-Shape—shoes of leather, rubber, canvas, or combinations of same. Hofheimer Brothers Co., Norfolk, Virginia.

179,925 Two Up—golf balls. Cupples Co., Manufacturers, St. Louis, Missouri.

179,945 Alenco, in blocked letters—linen fire hose. Wm. & Chas. Beck, Inc., Lawrence, Massachusetts.

179,961 Ryko—inner tubes and rubber tire covers. John R. Reilly, Los Angeles, California.

179,996 Representation of a packing ring, in front of which is a tag bearing the inscription: Johns-Manville Service Ring Packing, and above this a small map of the western hemisphere and the words: Covers the Continent—packing rings made of rubber and asbestos or textile fabric. Johns-Manville, Inc., New York, N. Y.

179,999 Badger Rubber Mills Co., LaCrosse, Wis., U. S. A., within a border having ear extensions at the sides—rubber boots and shoes. LaCrosse Rubber Mills Co., LaCrosse, Wisconsin.

180,074 Mock-Moccasin—boots, shoes and moccasins made either solely of leather or with leather uppers and soles of rubber or fabric or combinations of these. G. H. Bass & Co., Wilton, Maine.

Granted February 19, 1924, Act of March 19, 1920, Section 1(b)

180,084 Dunlop—golf balls. Dunlop Tire & Rubber Corporation of America, Buffalo, N. Y.

180,135 Within a circle and following the upper part of the circumference the words: Change Over—shoe heels of leather, rubber, or compositions. William A. Maloney, Newton, Massachusetts.

180,141 Multnomah—shoes of rubber, leather, fabric, or combinations.

Granted February 26, 1924, Act of February 20, 1905

180,279 A line drawing of a tire tread design—tire casings. Sterling Tire Corporation, Rutherford, N. J.

Granted March 4, 1924, Act of February 20, 1905

180,577 "Answer"—footwear made wholly or in part of rubber, leather, canvas, or textile materials. Shepard Norwell Co., Boston, Massachusetts.

180,727 The letter F on shaded circular background, the outer outline of which extends into triangles at the sides—tires wholly or partly of rubber, and inner tubes. The Fisk Rubber Co., Chicopee Falls, Massachusetts.

180,780 Representation of a little girl in a circular frame, and beside this the words: Dolly Gerla Frock—apparel, including shoes of leather, rubber, or fabric. M. Gerla & Son, New York, N. Y.

Granted March 4, 1924, Act of March 19, 1920, Section 1(b)

180,815 The words: STYLE No. 35, then a horizontal line and the additional words: GARLOCK LAKE BRAND SQUARE FLAX, and the firm name, THE GARLOCK PACKING CO.—packing and packing material made wholly or partly of or from various combinations of rubber, asbestos, cotton, flax, copper, lead, iron and babbitt. The Garlock Packing Co., Palmyra, N. Y.

180,820 STYLE No. 262, then a horizontal line and the words: GARLOCK SPECIAL HYDRAULIC COIL, THE GARLOCK PACKING CO.—packing and packing materials made wholly or in part of or from various combinations containing rubber, cotton, asbestos and metals. The Garlock Packing Co., Palmyra, N. Y.

180,821 STYLE No. 107, then a horizontal line followed by the words: GARLOCK HIGH PRESSURE DIAGONAL COIL, THE GARLOCK PACKING CO.—packing and packing materials made wholly or in part of or from various combinations containing rubber, cotton, asbestos and metals. The Garlock Packing Co., Palmyra, N. Y.

180,826 NIAGARA—shoes of leather and rubber and of leather, rubber and fabric, Niagara Shoe Co., Inc., Buffalo, N. Y.

Granted March 11, 1924, Act of February 20, 1905

181,020 "BOBBIE"—rubber combs. The Vulcanized Rubber Co., Portland, Maine, and New York, N. Y.

181,026 Representation of metal tongs between the arms of which is the word GARLOCK, on a diamond-shaped background, and beneath this the representation of a six-inch rule—packing and packing materials made of or from asbestos, rubber, cotton and metals. The Garlock Packing Co., Palmyra, N. Y.

181,100 THE VIRGINIAN—THE ARISTOCRAT OF CORD TIRES—pneumatic tires. Virginian Tire & Rubber Co., St. Albans, West Virginia.

181,109 RIMLINER—inner and exterior tire flaps for tires; tire accessories. Abraham I. Levin, doing business as Rawhide Products Distributing Co., Kenilworth, N. J.

181,112 Representation of two children blowing bubbles, and separating the two heads the word FUN, the background of the whole being a shaded parallelogram—toy balloon. Candy-Toy Co. of America, Harrisburg, Pennsylvania.

181,142 MARVEL, in heavy black letters—golf balls. The Worthington Ball Co., Elyria, Ohio.

181,143 Distinctive figure composed of three conventionalized drawings of a tooth, the base lines forming the three sides of a triangle—seamless dipped rubber goods. The Mitcham Rubber Co., Ltd., London, England.

Granted March 11, 1924, Act of March 19, 1920, Section 1(b)

181,171 STYLE No. 90, then a horizontal line followed by the words: GARLOCK WATERPROOF HYDRAULIC COIL, THE GARLOCK PACKING CO.—packing or packing material made from or of various combinations of asbestos, rubber, cotton, flax and metals. The Garlock Packing Co., Palmyra, New York.

New Zealand

Published December 31, 1923

20,744 RUBA—rubber brushes. Rubber Brushes, Ltd., 125 High Holborn, London, England.

20,762 TRETORN—balls, toys, and all sporting articles of rubber included in Class 49. Helsingborgs Gummifabriks Aktiebolag, of Furutorpsgatan, Block Esculap Nos. 1, 2, 14, 15, 16, and 17, Helsingborg, Sweden.

20,815 COMMANDER—Rubber tires of all kinds. The B. F. Goodrich Co., 1780 Broadway, New York, N. Y., U. S. A.

The United Kingdom

Published February 6, 1924

439,758 MOSLIFLEX—all goods included in Class 40. David Moseley & Sons, Ltd., Chapel Field Lane, Ardwick, Manchester, England.

439,759 MOSLIFLEX—all goods included in Class 49. David Moseley & Sons, Ltd., Chapel Field Lane, Ardwick, Manchester, England.

439,760 MOSLIFLEX—engine, machine, pump and hydraulic packings; and hose; included in Class 50. David Moseley & Sons, Ltd., Chapel Field Lane, Ardwick, Manchester, England.

440,636 Representation of a card on which is printed diagonally "CORNMAC"; above it the monogram CR with CO., LTD. in very small type within the C; and below it the words: GUARANTEED WATERPROOF; in the corners the words MADE IN ENGLAND, C. R. CO., LTD., and LONDON, respectively. The Cornbrook Rubber Co., Ltd., 83 Farringdon street, London, E. C. 4.

Published February 13, 1924

B441,359 THE "AQUABACTA" SHOWERPROOF, the words arranged distinctively on a card with the representation of a duck swimming on a pond, in the upper left corner—waterproof and rainproof garments. J. E. Barlow & Co., Ltd., Sherborne Rubber Works, Sherborne street, Strangeways, Manchester, Lancashire.

442,829 SPANKA—golf balls. Francis De Sales Lysaght, 50 Falkland Road, Wallasey, Cheshire.

443,462 NOBEL, within a black circular border broken at one point; the word being underscored with two wavy black lines—goods of rubber or gutta percha exclusively in Class 40. Nobel Industries, Ltd., Nobel House, 2A, Buckingham Gate, London, S. W. 1.

Published February 20, 1924

440,805 SANDORC—rubber balls for games. Walter Kent, trading as Kent's Men's Stores, Manchester House, High street, Shanklin, Isle of Wight.

441,444 The words: NORTH BRITISH AIR SPRUNG TYRE beneath which is the company's seal, the whole enclosed in a rectangular border—rubber tires. The North British Rubber Co., Ltd., Castle Mills, Fountainbridge, Edinburgh, Scotland.

444,217 LOCKNER—rubber heels, tips, soles and pads, all in Class 40. Sherlock, Ray & Turner, Ltd., 111 Oak street, Abingdon-on-Thames, Berkshire.

Published February 27, 1924

439,813 VA-CAR, in distinctive type—repair patches mainly of rubber, for tires. Virginia Carolina Rubber Co., Inc., Lewis street, Richmond, Virginia, U. S. A.

440,460 "ROSE" at the center of a circle, within the annular border lines of which are the words: THE WM. ROSE HOSE CO., LTD., MANCHESTER—fire hose. The Wm. Rose Hose Co., Ltd., The Metropolitan Works, Oldfield Road, Salford, Manchester, Lancashire.

442,883 In white letters on a circular black background with the representation of a fork of lightning piercing it is the word, in distinctive arrangement and lettering: DURABIT—electric insulating tapes of textile material impregnated with rubber. Kaupy & Schonmann Kabel-Isolier Band und Gummiwaren-Erzeugung "Durabit," Zollergasse 5, Vienna VII, Austria.

The Dominion of Canada

Registered

34,854 ZIPPER—footwear. The B. F. Goodrich Co., New York, N. Y., U. S. A.

Designs

The United States

Issued* February 19, 1924

64,025 Tire tread. Term 14 years. H. D. Mitchell, assignor to C. Kenyon Co., Inc., both of Brooklyn, N. Y.

64,026 Tire. Term 7 years. E. D. Newman, New York, N. Y.

Issued* February 26, 1924

64,072 Rubber heel. Term 7 years. F. A. McDonald, assignor to Lambertville Rubber Co., both of Lambertville, New Jersey.

Issued* March 4, 1924

64,153 Rubber heel. Term 7 years. Isaac Wagemaker, Athens, Tennessee, and Elmer G. Bretzin, Ensley and Verne C. Foster, Birmingham, both in Alabama.

Issued* March 11, 1924

64,170 Tire tread. Term 14 years. S. T. Ehrlich, assignor to Hudson Tire Co., Inc., Newark, New Jersey.

64,174 Tire tread. Term 14 years. T. G. Graham, assignor to The Mason Tire & Rubber Co., both of Kent, Ohio.

64,025 64,026 64,170 64,174 64,175 64,185 64,193 64,217

64,175 Tire. Term 14 years. T. Graybill, assignor to Kelly-Springfield Tire Co., both of Cumberland, Maryland.

64,185 Tire. Term 14 years. E. G. Hulse, assignor to Kelly-Springfield Tire Co., both of Cumberland, Maryland.

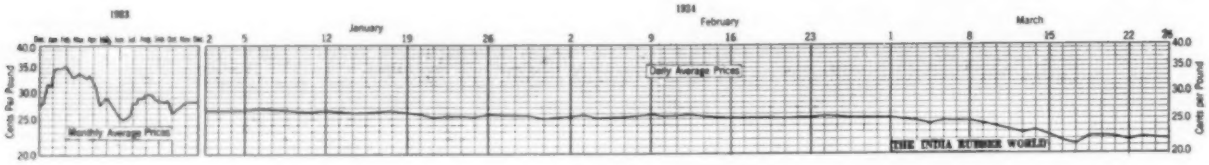
64,193 Tire. Term 14 years. T. C. Marshall, Mount Savage, assignor to Kelly-Springfield Tire Co., Cumberland, both in Maryland.

64,217 Tire tread. P. D. Thropp, assignor to Thermoid Rubber Co., both in Trenton, New Jersey.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

STERILIZATION OF MILKING MACHINE RUBBER

Experiments made by the Department of Agriculture regarding hot-water sterilization on teat-cup rubbers of milking machines prove that the life of these rubbers when regularly sterilized by this method varied from 6 to 17 weeks. It was also found that hot water gave better results in reducing the number of bacteria than did the use of either chlorin solution or salt and chlorin solution. Pure gum compound should also be used in the manufacture of such rubbers, which should be thoroughly cleansed before sterilization, as a little butter fat remaining on them has a destructive effect in connection with the heat.



Ratio Graph of New York Average Sales Prices of Spot Ribbed Smoked Sheets

Review of the Crude Rubber Market

New York

During the past month the crude rubber market was characterized by marked dullness and lack of buying interest on the part of consumers. Comparison of the spot price graphs for crude rubber and middling uplands cotton reveals an interesting parallel. Prices for each commodity have for three months, at least, shown a generally downward trend. Weekly since January 1 there have been rallies that did not hold. In the case of crude rubber, supplies are ample but the opposite is true in the case of cotton.

It would seem that this parallelism in falling prices and dullness in rubber and cotton indicates the persistence of a fundamental influence causing widespread lack of confidence. This influence is unquestionably the uncertainties attending the plan of tax reduction which has been under discussion for four months, with the end not yet in sight, whether wise or otherwise.

Ribbed smoked sheets on March 1 were 25¼ cents, declined to 21¾ cents on the fifteenth, then rallied to 22 to 22½ cents, holding for about a week, dropping again to 21¾ cents on March 26.

During the first week the marked factory buying activity was confined to small scattered lots at prices so close that dealers were obliged to meet buyers' ideas. London fluctuations were very slight. Early in the next week heavy liquidation in London caused New York prices to decline and enabled factories in need of rubber to secure it at 23 to 23¼ cents. Buying by dealers supported a rise for a day only, the week closing at 22⅝ cents.

The sensation of the market came about the middle of the month by reason of heavy sales attributed to Japanese houses in response to British interests. Prices dropped to 21⅛ cents but recovered quickly on support and higher sterling exchange rate. Subsequent low offers and reduced London prices nearly demoralized the market in the absence of factory demand.

In the dull, weak market of the final week of March, Japanese traders were selling on all positions; shortly reversing to buyers at the lowest point, 20½ cents, the market promptly reacting to 22½ cents. Factories continued buying only small scattered lots for immediate shipment.

The April position was noticeably weak on the belief that shipments which have been held up at sea from the East will be delivered during the month.

Paras have continued sympathetically weak and dull the entire month and together with balatas have been neglected.

Importations of all grades during February, 1924, were 31,763 tons, compared with 24,220 tons one year ago. Plantation arrivals for February, 1924, were 29,977 tons, compared with 21,815 tons one year ago. Total importations of all grades for the two months ended February 29 were 53,374 tons, compared with 55,417 tons for the corresponding period of last year.

Spot and future quotations on standard plantation and Brazilian grades were as follows:

Plantation. March 1. Spot first latex crêpe, 25⅜-25½ cents; Mar. 25⅜-25½ cents; Apr.-June, 25⅞-26 cents; July-Sept., 26¼-26⅜ cents.

March 25. Spot first latex crêpe, 22¾-23 cents; Apr.-June, 23 cents; July-Sept., 23¼-23½ cents; Oct.-Dec., 24½ cents.

March 1. Spot ribbed smoked sheets, 25-25⅛ cents; Mar. 25, 25⅛ cents; Apr.-June, 25¾-25⅞ cents; July-Sept., 26-26¼ cents.

March 25. Spot ribbed smoked sheets, 22¼-22½ cents; Apr.-June, 22½ cents; July-Sept., 23 cents; Oct.-Dec., 23½-23¾ cents.

March 1. Spot No. 1 amber crêpe, 24½-24⅝ cents; Mar. 24½-24⅝ cents; Apr.-June, 24⅝-24¾ cents; July-Sept., 25-25¼ cents.

March 25. Spot No. 2 amber crêpe, 22-22¼ cents; Apr.-June, 22 cents; July-Sept., 22½ cents.

March 1. Spot No. 1 rolled brown crêpe, 24-24¼ cents; Mar., 24¼ cents; Apr.-June, 24⅜-24½ cents; July-Sept., 24½-24⅝ cents.

March 25. Spot No. 1 rolled brown crêpe, 22 cents; Apr.-June, 22½ cents; July-Sept., 23 cents.

South American Paras and Caucho. March 1. Spot, upriver fine, 20 cents; islands fine, 18¼ cents; upriver coarse, 17¼ cents; islands coarse, 11 cents; Cametá, 11¼-11½ cents; caucho ball, 19¼ cents.

March 25. Spot, upriver fine, 18½ cents; islands fine, 16-17 cents; upriver coarse, 15½-16 cents; Cametá, 11½ cents; caucho ball, 15-16¾ cents.

New York Average Spot Rubber Prices

Prices in Cents Per Pound

Plantations	February, 1924											March, 1924											
	18	19	20	21	22*	23	25	26	27	28	29	1	3	4	5	6	7	8	10	11	12	13	14	15
Sheet																								
Ribbed smoked	25⅛	25	25⅛	25¼	....	25½	25⅜	25⅜	25⅜	25⅛	25⅛	25⅛	24¾	24	24¼	24½	24¼	24¼	23¾	23¼	22¾	22⅞	22⅛	21¾
Crêpe																								
First latex	25⅛	25⅛	25⅛	25⅛	....	25⅜	25⅛	25⅛	25⅛	25⅛	25⅛	25⅛	25	24¼	24½	24¾	24¾	24½	24¼	23¾	23	23¼	22½	22⅛
Off latex	25¼	25	25⅛	25¼	....	25½	25¼	25⅛	25⅛	25⅛	25¼	25⅛	24¾	23⅞	24¼	24½	24¼	24¼	24	23⅛	22¾	22⅞	22¼	21¾
No. 1 blanket	25	24¾	24½	24¾	....	25¼	24¾	24¾	24¾	24⅞	24⅞	24¾	24½	23¾	24	23¾	24⅛	24	23¾	23½	22¾	23¼	22¾	22¼
No. 2 blanket	24⅛	24⅛	24¼	24⅛	....	24⅜	24⅛	24⅜	24½	24½	24⅜	24⅛	24¼	23½	23⅛	23⅝	23⅝	23½	23⅜	23¼	22⅜	22⅞	22½	22⅛
No. 3 blanket	24	24	24	24	....	24¼	24⅛	24⅛	24¼	24¼	24⅛	24¼	23⅞	23½	23⅜	23⅜	23⅜	23½	23⅛	23¼	22⅝	22⅝	22¼	21½
Thin, clean brown	24	23⅞	24	24	....	24¼	24⅛	24⅛	24	24⅛	24	24	23⅝	23⅛	23¼	23½	23⅝	23⅜	23¼	22⅜	22¼	22⅝	22¼	21⅜
Specky brown	23½	23½	23⅜	23⅝	....	23⅞	23¾	23¾	23⅞	23¾	23¾	23¾	24½	22¾	22¾	23	23	22⅝	22¾	22⅜	22	22⅛	21¾	21
Rolled brown	24⅛	24⅛	24⅜	24⅜	....	24⅜	24½	24⅜	24⅜	24¼	24¼	24¼	23⅝	23⅛	23¼	23½	23¼	23⅛	22⅞	22⅝	21⅞	22¼	21¾	21½

*Holiday.

New York Quotations

Following are the New York spot quotations per pound, for one year, one month ago, and March 25, the current date:

Plantation Hevea	March 26, 1923	February 25, 1924	March 25, 1924
LATEX			
Rubber latex (Hevea)	$1.25 @$1.35 *per gal.*	$1.30@ *per gal.*	$1.30@
CREPE			
First latex	.33½@.33¾	.26 @.26½	.22¾@.23
Off latex	.33¼@.33½	.25¾@.25¾	.22½@.22¾
Amber No. 1	.32¾@.33	.25 @	@
Amber No. 2	.32¼@.33½	.24½@.24¾	.22 @.22¼
Amber No. 3	.32 @	.24 @	.22 @
Brown, clean, thin	.32 @.32¼	.24½@	.22 @
Brown, specky	.31½@	.24¼@	.21¼@.21¾
Brown, rolled	.30½@	.24½@	.21¾@.22
SHEET			
Smoked, ribbed	.33½@.33¾	.25½@.25¾	.22¼@.22½
Smoked, plain	.33 @	†.24½@	@
Unsmoked	.32 @	†.23½@	@
East Indian			
PONTIANAK			
Banjermassin	.08 @	.07½@.08	.06¾@.07½
Palembang	.14 @	.08½@.08¾	.07¾@
Pressed block	@	.13½@.14	.13¼@.13¾
Sarawak	.07½@	.07½@	.07 @
South American			
PARAS			
Upriver, fine	.30½@	.20½@	.18½@
Upriver, fine	*.43 @	*.30¼@	*.28½@
Upriver, medium	.28½@	.18 @	.17 @.17¼
Upriver, coarse	.27½@	.17¼@	.15½@.16
Upriver, coarse	@	*.27¾@	*.25¾@
Islands, fine	.29 @	.18 @	.16 @.17
Islands, medium	.25 @	†.12 @	@
Islands, coarse	.15 @	†.11 @	.10½@
Cametá	.15 @	.11 @.11½	†.11½@.12
Acre Bolivian, fine	.30½@	.20½@.21	.19 @.19¼
Acre Bolivian, fine	*.43 @	*.30½@	*.28½@.29
Beni Folivian	.30½@	.20½@	.19¼@.19½
Madeira, fine	.31 @	.21¼@	.19½@
Peravian, fine	.29 @	.19 @	.17 @.17¾
Tapajos	.29 @	.19 @.19½	.17½@.17¾
CAUCHO			
Upper caucho ball	.28 @	.19½@	.16½@.16¾
Upper caucho ball	*.40 @	*.28½@	*.26 @
Lower caucho ball	.27 @	.18½@	.15 @.15½
Maniçobas			
Ceará negro heads	.24 @	.20 @	.20 @
Ceará scrap	.13 @	.08 @	.08 @
Maniçoba 30% guaranty	.26 @	.18 @	.18 @
Mangabeira, thin sheet	.30 @	.23 @	.23 @
Centrals			
Central scrap	.25 @.26	@	.16½@
Central wet sheet	.18 @.20	.15 @	.14 @
Corinto scrap	.25 @.26	.17 @.17¼	.16½@
Esmeralda sausage	.25 @.26	@	.16½@
Guayule washed and dried	.29 @	.24 @	.23½@
Africans			
Benguela, No. 1, 28½%	.20 @	.16 @	.17 @
Benguela, No. 2, 32½%	.17 @	.12 @	.13 @
Congo prime, black upper	.25 @	.19 @	.19 @
Congo prime, red upper	.26 @	.20 @	.20 @
Kassai, black	.26 @	.19 @	.19 @
Kassai, red	.27 @	.20 @	.20 @
Gutta Percha			
Gutta Siak	.20 @	.17¼@.18	.17¾@
Gutta Soh	@	.29 @	.32 @
Red Macassar	3.10 @	2.90 @3.00	3.00 @
Balata			
Block, Ciudad Bolivar	.75 @	.67 @.68	.66 @
Colombia	.66 @	.54 @.56	.57 @
Panama	.64 @	.54 @.55	.56 @
Surinam, sheet	.85 @	.72 @	.73 @
amber	.92 @	.75 @	.76 @
Chicle			
Colombia	.25 @.30	@	†.30 @
Honduras	.62 @	.64 @.65	†.65 @
Venezuela	.63 @	.65 @	†.65 @.66
Yucatan, fine	.65 @	.67 @	†.67 @.68

* Washed and dried crêpe. Shipment from Brazil.
† Nominal.

London

London rubber prices held steady, as a rule, throughout the month. Ribbed smoked sheets opened at 13¾ pence. This price was forced down gradually, because of a strong bear movement and liquidation which was operative most of the month. About the fifteenth, American interests were buying and buyers outnumbered sellers, steadying and supporting prices. Attempted liquidation, however, quickly lost the advance and the price fell to 11⅝ pence, reached by a fall said to be the severest one day decline in years. From this price there was some recovery on continuation of good American support. The market has responded to a good demand for forward rubber, a sharp reduction in the stock figures, and a clearing of the March position, which was sold heavily during the third week.

Certain of the rubber selling trade are reported to have petitioned the Stevenson Committee to reduce the exportable allowance figures for the next quarter to 50 per cent instead of the prevailing 60 per cent.

Reported London stocks show a decrease of 1,453 tons from February 26 to March 25. The weekly stocks were as follows: February 26, 56,739 tons; March 4, 56,341 tons; March 11, 55,975 tons; March 18, 55,286 tons; March 25, 54,530 tons.

Comparative Low and High New York Spot Rubber Prices

	March					
PLANTATIONS	1924*		1923		1922	
First latex crêpe	$0.20¼@$0.25½		$0.33½@$0.36¾		$0.13¾@$0.15	
Smoked sheet, ribbed	.20⅛@	.24¾	.33½@	.36¼	.13¾@	.15¼
PARAS						
Upriver, fine	.18½@	.20½	30½@	.34	.17 @	.17¾
Upriver, coarse	.15½@	.17¼	26½@	.28½	.12 @	.13
Islands, fine	.15 @	.18¼	28½@	.32	.16 @	.17½
Islands, coarse	.09½@	.11	15 @	.26	.07½@	
Cametá	.10½@	.11½	.14 @	.17	.09 @	.11

* Figured to March 25, 1924.

Reclaimed Rubber

During the past month business in reclaims has shown somewhat less activity. Rubber manufacturers are making commitments if at all on a very conservative basis. Buying of reclaims is proceeding in response chiefly to current factory requirements. The reclaiming mills are operating at about three-quarters capacity.

Prices remain unchanged from those of a month ago except that the spread is a little wider in the case of white auto tire reclaim. Prices are very closely figured to minimum of profit based on high efficiency of operation, on volume production and standardization of grades. Better values in reclaim have never been available at lower prices.

The continued downward tendency of crude rubber prices has exerted a marked reaction to depress reclaim prices and relatively raise volume cost values to users of reclaims.

New York Quotations

March 26, 1924

Auto Tire		
Black	lb.	$0.08¾ @$0.09¼
Black, washed	lb.	.11 @ .11¾
Dark gray	lb.	.09¾@ .10¼
Light gray	lb.	.11 @ .11¼
White	lb.	.15 @ .18
Shoe		
Unwashed	lb.	.09¾@ .10
Washed	lb.	.13 @ .13¼
Tube		
No. 1	lb.	.15¼@ .15½
No. 2	lb.	.12¼@ .12½
Uncured Tire Friction		
No. 1	lb.	.22½@ .23½
No. 2	lb.	.17 @ .18
Miscellaneous		
High grade red	lb.	.13¼@ .13½
High tensile, black	lb.	.15¾@ .16
Mechanical blends	lb.	.05 @ .06
Truck tire	lb.	.08¼@ .08½

Official India Rubber Statistics for the United States

Imports of Crude and Manufactured Rubber

	January, 1923		January, 1924	
	Pounds	Value	Pounds	Value
UNMANUFACTURED—*free*				
Crude rubber				
From France	921,102	$263,684	66,390	$15,661
Netherlands	845,354	143,919	377,522	94,505
Portugal	.....	.....	1,854	180
United Kingdom	2,562,137	470,944	5,346,547	1,383,367
Canada	.....	.....	.....	.....
Central America	3,972	417	2,661	325
Mexico	8,198	1,944	.....	.....
Brazil	2,869,443	480,739	2,201,983	422,742
Peru	47,708	18,437	78,240	17,954
Other So. America	193,268	70,529	137,819	29,437
British E. Indies	52,450,313	9,145,726	32,969,341	8,147,257
Dutch E. Indies	18,088,976	3,354,044	7,298,847	1,805,141
Other countries	1,773,149	360,442	599,126	150,360
Totals	79,763,620	$14,310,825	49,080,330	$12,066,929
Balata	63,026	43,332	111,924	61,409
Jelutong (Pontianak)	821,344	59,550	640,270	114,938
Gutta percha	344,689	55,618	111,778	15,807
Rubber scrap	1,659,853	67,868	607,253	28,718
Totals unmanufactured	82,652,532	$14,537,195	50,551,555	$12,287,801
Chicle ..... *dutiable*	1,239,631	$634,934	1,097,877	$569,265
MANUFACTURED—*dutiable*				
Rubber belting	32,208	$28,410	43,399	$29,804
Other manufactures of and substitutes for rubber	.....	67,018	.....	148,475

Exports of Domestic Merchandise

	January, 1923		January, 1924	
	Pounds	Value	Pounds	Value
MANUFACTURED				
India rubber				
Reclaimed	403,657	$33,578	216,124	$18,924
Scrap and old	1,041,686	49,777	1,152,763	40,229
Footwear				
Boots ..... *pairs*	19,872	46,179	45,885	106,451
Shoes ..... *pairs*	25,762	24,653	108,224	98,994
Canvas shoes with rubber soles ..... *pairs*	319,123	234,649	190,723	153,647
Druggists' rubber sundries	58,921	57,837	.....	.....
Water bottles and fountain syringes	.....	.....	6,326	6,091
Other druggists' rubber sundries	.....	.....	42,884	44,956
Bathing caps	.....	.....	7,688	14,027
Hard rubber goods				
Battery jars and accessories	56,211	25,059	13,812	4,829
Other electrical supplies	36,858	16,330	15,541	9,578
Other hard rubber goods	29,392	26,006	24,635	29,846
Tires				
Pneumatic casings				
For automobiles	126,180	1,378,217	72,426	866,651
Others	11,175	39,762	4,132	20,094
Pneumatic tubes				
For automobiles	80,547	134,792	76,091	138,753
Others	4,878	4,971	3,534	3,129
Solid tires				
For automobiles and motor trucks	8,031	193,803	9,779	325,487
Others	41,439	11,129	92,958	25,160
All other tires	.....	.....	.....	.....
Tire repair materials	55,771	24,180	64,848	23,144
Belting	309,921	153,079	252,233	148,139
Hose	352,623	125,905	433,396	169,472
Packing	95,589	43,391	156,458	69,435
Soles and heels	171,562	62,973	159,531	50,325
Thread	55,348	52,277	73,370	83,802
Other rubber manufactures	342,523	204,521	327,558	210,564
Totals, manufactured	.....	$2,933,268	.....	$2,661,726

Exports of Foreign Merchandise

	January, 1923		January, 1924	
	Pounds	Value	Pounds	Value
UNMANUFACTURED				
India rubber	1,981,195	$577,885	1,947,306	$507,380
Balata	29,010	9,153	45,586	19,127
Jelutong (Pontianak)	.....	.....	.....	.....
Totals, unmanufactured	2,010,205	$587,038	1,992,892	$526,507
MANUFACTURED				
Gutta percha and india rubber	40	278	1,537	1,047
India rubber substitutes	.....	.....	50,414	1,811
Totals, manufactured	40	$278	51,951	$2,858

Details of exports of domestic merchandise by countries during January, 1924, appear on pages 492-495 of this issue.

The Market for Rubber Scrap

New York

The rubber scrap grades remain at practically the same price levels as a month ago except for a drop of a dollar a ton on air brake and regular hose. This situation seems not to be affected by the decline in crude rubber prices which has progressed for the past three months. Reclaimers are not actively seeking supplies because of the moderate demand for their products and the absence of inclination of their customers to make contracts for future delivery.

BOOTS AND SHOES. The price of boot and shoe scrap is firm at about ⅛ cent a pound lower, with less demand than existed a month ago.

TIRES. The price is fairly firm. The demand for mixed tires was more active in Akron than elsewhere during the month. Interest centered to some extent in white and gray tires at prices under those of last month.

INNER TUBES. Trade in inner tubes continues quite inactive and prices remain unchanged and firm at the levels reported a month ago.

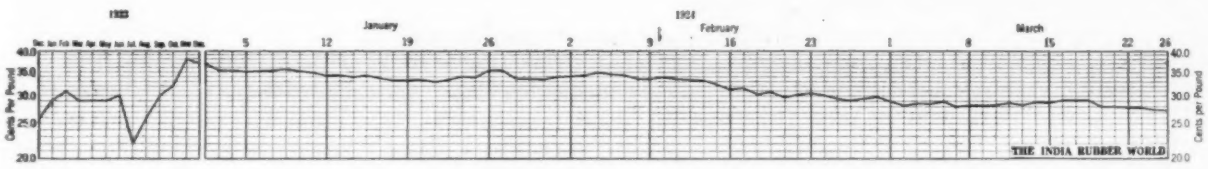
Consumers' Quotations for Carload Lots Delivered

March 26, 1924

Boots and Shoes		
Boots and shoes, black	*lb.*	$0.02⅞@$0.03
Trimmed arctics	*lb.*	.02½@ .02¾
Untrimmed arctics	*lb.*	.01½@ .01⅝
Hard Rubber		
Battery jars, black compound	*lb.*	.01 @ .01¼
No. 1 scrap	*lb.*	.07 @ .08
Inner Tubes		
No. 1	*lb.*	.04 @ .04¼
No. 2	*lb.*	.02¾@ .03
Red	*lb.*	.02¾@ .03
Mechanicals		
Black scrap, mixed	*lb.*	.00¾@ —
Heels	*lb.*	.00½@ —
Horse-shoe pads	*lb.*	.01 @ —
Hose, air brake	*ton*	14.00 @16.00
regular	*ton*	11.00 @13.00
Red, scrap, mixed	*lb.*	.01½@ .02
White, scrap, mixed	*lb.*	.01½@ .02
Tires		
PNEUMATIC		
Auto peelings	*lb.*	.01 @ .01¼
Bicycle	*ton*	10.00 @12.00
Standard white auto	*ton*	28.00 @32.00
Mixed auto	*ton*	13.00 @14.00
Stripped, unguaranteed	*ton*	10.50 @11.00
SOLID		
Carriage	*ton*	20.00 @25.00
Irony	*ton*	10.00 @15.00
Truck, clean	*ton*	20.00 @25.00

EGYPTIAN COTTON CROP AND U. S. CONSUMPTION

For the ten year period 1913-1923 the total Egyptian cotton crop, in bales of 750 pounds each, was 1,024,556 in 1913-14, declined to 630,202 for 1915-16. Since the war production has fluctuated considerably but in the last two years approximated the 1913-14 production. The consumption of Egyptian cotton in America was 960,000 bales in 1913-14; 335,000 in 1916-17, and 987,000 in 1922-23. The total visible world's supply for 1923-24 is estimated at 284,000 bales.



Ratio Graph of New York Daily Prices of Spot Middling Upland Cotton

The Market for Cotton and Other Fabrics

New York

AMERICAN COTTON. Spot Middling Uplands price has declined during the past four months barring a few brief rallies. Cotton authorities credit the decline to the general conviction that prices must go to levels at which goods can be sold freely to maintain mill operations. The price weakness means that the check to consumption has been sufficient to balance the apparent shortage of supplies. The hope of increased production is based on four factors: (1) the prospect of an increase in acreage; (2) increased fertilizer sales up to March 1, compared to those to the same date a year ago; (3) the good winter rainfall in the Southwest; and (4) the report from the government which states that only one boll weevil has survived the winter to two tons of moss this year as compared to 19 to one ton last year, and 127 to one ton two years ago.

EGYPTIAN COTTON. There has been very little change in the supply of staple cotton. Prices have eased off in accordance with the general market weakness. Attention is beginning to focus on new crops in Egypt where it is expected a record acreage will be planted and that the increase in the amount of short cotton planted will be large.

The largest acreage in cotton ever planted in Egypt was 1,828,000 feddans, in 1920. Private reports from the interior indicate that nearly 2,000,000 feddans will be sown, in which case next season's crop might easily exceed 7,000,000 cantars. The weather has been exceptionally favorable for soil preparation and planting, which has already begun.

Prices of Medium Sakellaridis and Medium Uppers for prompt shipment from Boston were, respectively, on March 1, 40⅝ and 39⅛ cents; March 8, 39⅜ and 37½ cents; March 15, 39½ and 38 cents; March 22, 41⅛ and 39¼ cents. The firming of prices is due to cleaning up of stock lots in the domestic market rather than to any change in the primary market.

ARIZONA COTTON. The demand is light for Arizona cotton and there is not a great deal of desirable cotton left. Sea Island Cotton has practically disappeared.

Cotton Fabrics

DUCKS, DRILLS AND OSNABURGS. Buying for current needs is steadily coming forward but the market fails to show the activity ordinarily prevailing at this period of the year. Osnaburgs and coarse yarn brown specialties are very irregular due to stock accumulations at mills. The demand is very light and the market wholly in favor of the buyer.

SHEETINGS. There is only small amount of buying in scattered lots where goods are absolutely needed. Buyers are waiting and prices are weak and very unsatisfactory. Many mills are operating only three days a week. Demand for cloth must improve or prices will go still lower. Quotations are now ¾ cent a yard below those of a month ago for weights used in rubber goods manufacture.

RAINCOAT FABRICS. These materials are moving very slowly at the present time. The trade reports a broader inquiry for goods. Many concerns that have not handled raincoats for several years are now placing sample orders.

TIRE FABRICS. The volume of spot business stands out in the absence of a steady contract demand. Several tire makers are reported recently as having contracted for about half a million pounds of cord and square woven fabric. There is said to be lack of general covering into the third quarter of the year.

Tire fabrics can be sold in volume only at prices that do not let the mills out whole and on no other basis. This situation is attributed to the over production of tire fabrics and allows tire manufacturers to secure fabric at practically their own figures. Nearly all the current tire fabric business amounts simply to requisitions on cost-plus contracts.

There are said to be five times as many mills in the business as are needed to supply the fabric demand. Evidently some of them are liable to drop out of the race.

New York Quotations

March 26, 1924

Drills

38-inch 2.00-yard	yard	$0.23¾ @
40-inch 3.47-yard		.14⅛ @
52-inch 1.90-yard		.25⅞ @
60-inch 1.52-yard		.32¼ @

Duck

CARRIAGE CLOTH

38-inch 2.00-yard	yard	.24½ @
40-inch 1.47-yard		.33 @
72-inch 16.66-ounce		.56¼ @
72-inch 17.21-ounce		.58⅛ @

MECHANICAL

Hose	pound	.47 @
Belting		.47 @

TENNIS

52-inch 1.35 yard	yard	.37½ @

Osnaburgs

40-inch 2.35-yard	yard	.20½ @
40-inch 2.48-yard		.19⅜ @
40-inch 3.00-yard		.16⅜ @
37½-inch 2.42-yard		.19⅞ @

Raincoat Fabrics

COTTON

Bombazine 64 x 60	yard	$0.13 @
Bombazine 60 x 48		.12¼ @
Plaids 60 x 48		.13 @
Plaids 48 x 48		.12 @
Surface prints 60 x 48		.13 @
Surface prints 64 x 60		14 @

Sheetings, 40-inch

48 x 48, 2.50-yard	yard	.16¾ @ .17
48 x 48, 2.85-yard		.14¼ @
64 x 68, 3.15-yard		.15 @ .15¼
56 x 60, 3.60-yard		.12¾ @ .13
48 x 44, 3.75-yard		.11½ @ .12

Sheetings, 36-inch

48 x 48, 5.00-yard	yard	.08¾ @ .09
40 x 40, 6.15-yard		.07¼ @

Tire Fabrics

SQUARE WOVEN 17¼-ounce

Egyptian, karded	pound	$0.60 @ .62
Peeler, karded		.55 @ .56

CORD 23/5/3

Egyptian, combed	pound	.80 @ .85
Egyptian, karded		.62 @ .65
Peeler, combed		.80 @
Peeler, karded		.56 @ .58

CORD 13/3/3

Peeler, karded	pound	.55 @ .56

LENO BREAKER

8-oz. Peeler, karded	pound	.55 @ .57
10-oz. Peeler, karded		.55 @ .57

CHAFER

8.25-oz. Peeler, karded	pound	.55 @ .57
9.5-oz. Peeler, karded		.55 @ .57
12-oz. Peeler, karded		.55 @ .57
14-oz. Peeler, karded		.55 @ .57

The Cotton Outlook

Weevil Devastations Pushing Cotton Belt Northward

While world cotton consumption steadily increases, the United States—the world's greatest cotton growing country—continues to grow short crops year after year. Meantime the crops of India, China, Egypt, Brazil, Mexico, Peru and other countries increase, and a race in cotton growing develops between the British and the French in dominions, colonies and protectorates. Other countries where cotton has been grown little or not at all are now attempting its cultivation. These include Colombia, Ecuador, Argentina, Manchuria and Turkey. Taken individually, these items may appear unimportant, but regarded collectively they spell danger to America's supremacy as the leading cotton growing nation.

Causes of Short American Crops

No subsequent American crop has approached the record yield of 16,134,930 equivalent 500-pound bales grown in 1914-15 on 36,832,000 acres of land, although the acreage, except for the seasons of 1915-16 and 1921-22, has been nearly as great. The nearest approach to it was the crop of 13,439,603 bales grown on 35,878,000 acres during the season of 1920-21, following which the business slump and low cotton prices resulted in the smallest acreage and crop for many years (7,953,641 bales from 30,509,000 acres in 1921-22).

It is a significant fact that average yield of lint cotton per acre dropped from 209 pounds in 1914-15 to 124.5 pounds in 1921-22, and that average crop damage per acre correspondingly increased from 77 to 163.1 pounds per acre in the same period. In other words, the cotton lost per acre has become greater than that harvested.

The small yield per acre in many of the cotton states is due to boll weevil and other insect ravages, adverse weather conditions, exhaustion of the soil, the rising cost of fertilizers, and labor difficulties. Of these causes the greatest crop losses have resulted from weevil damage, the worst scourge that ever ravaged the South, and which has been steadily increasing.

Statistics of Boll Weevil Damage

The following statistics compiled by the United States Department of Agriculture indicate the fearful losses imposed upon the American cotton crop by boll weevil depredations. The figures are in terms of equivalent 500-pound bales exclusive of linters.

Year	Weevil Damage Bales*	All Damage Bales*	Lint Crop Produced Bales	Acres	Lint Crop Pounds Per Acre	Crop Damage Pounds Per Acre
1909-10	1,368,000	9,369,000	10,004,949	32,044,000	....	144.9
1910-11	2,297,000	8,702,000	11,608,616	32,403,000	....	128.5
1911-12	338,000	8,893,000	15,692,701	36,045,000	....	91.5
1912-13	714,000	7,243,000	13,703,421	34,283,000	....	99.8
1913-14	1,579,000	7,957,000	14,156,486	37,089,000	....	102.4
1914-15	1,381,000	5,937,000	16,134,930	36,832,000	209.0	77.0
1915-16	1,983,000	7,346,000	11,191,820	31,412,000	170.0	111.9
1916-17	2,994,000	9,905,000	11,499,930	34,985,000	157.0	130.0
1917-18	2,095,000	8,954,000	11,302,375	33,841,000	160.0	126.6
1918-19	2,325,000	9,136,000	12,040,532	36,008,000	160.0	121.4
1919-20	2,780,000	8,825,000	11,420,763	33,566,000	161.5	125.8
1920-21	4,595,000	8,975,000	13,439,603	35,878,000	178.4	119.7
1921-22	6,277,000	10,712,000	7,953,641	30,509,000	124.5	163.1
1922-23	.....	.....	9,761,817	34,852,000	140.0*	....
1923-24	.....	.....	10,081,000*	38,287,000	131.6*	....

*Estimated.

Crop losses attributable to insect pests, which averaged 29.3 pounds per acre for the ten years from 1909 to 1918 inclusive and were only 19.2 pounds in 1912, amounted to 109.1 pounds per acre in 1921 or nearly 67 per cent of the total damage from all causes, 163.1 pounds per acre. During the 1921-22 cotton year it is estimated that the boll weevil alone destroyed 6,277,000 bales of cotton, or an amount equal to 79 per cent of the crop produced, an increase of 37 per cent of the previous season. The cotton crops of the past two seasons had to be shared about half and half with the weevil, while weather and other damage brought the total loss to a figure greater than the crop produced.

Efforts to Control the Pest

Unless this pest is soon brought under control, cotton growing in the United States will be seriously menaced. Federal, state and cotton association officials have been and still are cooperating in various campaigns of extermination and control, but economic and labor conditions have proved big handicaps. Scientific cultural methods, seed selection and crop rotation to eradicate the pest by starvation may accomplish much. Dusting with calcium arsenate is proving helpful and might increase the crop 40 per cent if enough could be obtained. Efforts are also being made in the Delta region of Mississippi to breed a cotton variety known as Salisbury, which can survive the weevil.

Entomologists believe the only reasonable explanation of the absence of the cotton boll weevil in China is that it has been exterminated or kept from spreading by some kind of parasite that feeds upon it. Entomologists of the United States Department of Agriculture are trying to find it.

1924 Acreage and Location

The strong statistical position and high prevailing prices assure somewhat increased acreage for the coming season, but a larger crop can probably be had without material increase in acreage. In fact, the most promising method of eradicating the boll weevil lies in the northern expansion of the cotton belt in sections where the summer season is sufficiently long yet the winter is severe enough to freeze and kill the weevils.

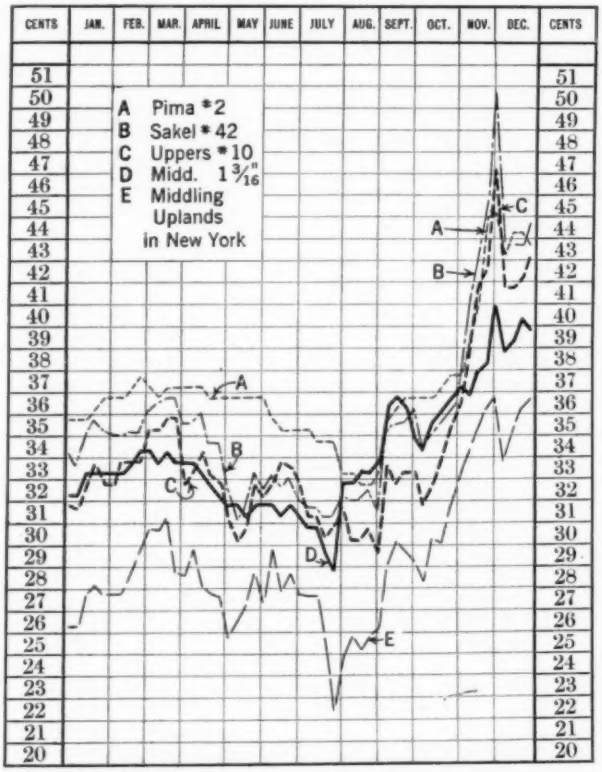
Substantial cotton acreage increases are likely in the states of Missouri, Illinois, Kentucky, North Carolina and Virginia, where cotton has become a paying crop in comparison with grain, and yields per acre have been large, due to freedom from the boll weevil. How far north cotton can be grown is uncertain, but the fact remains that the yield per acre of the states lying along the former northern limits of production were, according to Department of Agriculture statistics, 236 pounds for the season of 1921-1922 against only 117 pounds average per acre for the older producing states farther south and 124.5 pounds for the entire cotton area. Missouri led all the states with an average of 325 pounds per acre. This exceeds the Arizona and California averages of 242 and 258 pounds, respectively, where cotton is grown on irrigated land. Seed bred for early maturing qualities, necessary in the race against the boll weevil, will assist more northern planters in their race against early frosts.

Under favorable conditions the yield of cotton in some localities approaches a bale to the acre. This is largely the result of improved cultural methods, which involves thorough preparation of the soil, the use of commercial fertilizers, rotation of cotton with leguminous crops, frequent and intelligent cultivation, and dusting with calcium arsenate where necessary. These methods practiced as far north as cotton can be grown should yield a crop of at least 15,000,000 bales on 35,000,000 acres of land.

The boll weevil can be conquered. It is simply a question of education of the cotton farmer and the provision of means to finance a campaign on a large scale under a leadership that will direct the fight aggressively and effectively.

Comparative Cotton Prices—1923

The graphs on the accompanying chart show the price fluctuations of Egyptian Pima and American cotton during 1923, representing the average of the daily offers from Alexandria figured on basis of landed in Boston or New York. Pimas and American cottons figured on basis of landed New England mill points. The range from lowest to highest prices for all grades covered the four months period between August 1 and December 1. All



P. J. Jackson Co.

Fluctuations of Long Staple Cotton—1923

the grades fluctuated sympathetically. The lowest and highest points for each grade represented were as follows: Sakel No. 42, 31½ to 50¾ cents; Uppers No. 10, 29¾ to 47¼ cents; Pima No. 2, 32¾ to 43¾ cents; Middlings 1-3/16-inch, 28¾ to 41 cents; Middling Uplands, 22¼ to 36¾ cents.

Metal Market Review

New York

During the first half of March all markets were in general quiet and all were firm and higher except zinc. Prices for tin continued to advance, the market being however largely speculative. Consumption of steel continued heavy, and statistics prepared by the American Iron and Steel Institute show that the rate of operations in February indicated an annual output of 47,000,000 tons. With the rise in the value of the franc, however, following the American loan to the French Government, great fluctuations were in evidence in all markets, and prices throughout the third week of March were very unsettled. Later in the month more firmness developed.

Aluminum. While most of the large automotive consumers of this metal are fairly well covered for their requirements during the first half of the year, some of the smaller users are meeting with some difficulties in procuring enough for their needs. Norwegian shipments of ingots, mainly for one producer, continue to arrive, while there is a steady demand at high prices for secondary metal remelted, as well as new scrap.

Antimony. Supplies are still scarce and there are no old stocks. Chinese metal for early delivery was quoted at 11.75 to 12 cents, New York, duty paid.

Copper. There has been an improvement in foreign buying, which will continue, it is believed, if the reparations problem is settled, and if copper production is curtailed, as now seems assured. According to a survey just completed by the Copper and Brass Research Association, the electrical industries of the United States consumed in 1923 a total of 800,000,000 pounds of copper, this being approximately one-half of all the copper consumed in this country last year. The survey concludes with the statement that copper consumption in the electrical industries will in the near future exceed 1,000,000,000 pounds a year.

Lead. The market is considerably quieter, although there was practically no metal for March delivery, with the April position also indicating great scarcity. Lead buyers appear to believe that there will be no famine and that prices will go no higher this year.

Nickel. Quotations for shot and ingot nickel are unchanged at 29 to 32 cents a pound, with electrolytic nickel held at 32 cents by the leading producers. In the outside market both shot and ingot nickel are quoted at 28 to 32 cents a pound.

Steel. According to *The Iron Age* the steel industry is operating at an annual rate of over 49 million tons of ingots, this being equivalent to 91 to 92 per cent of capacity, and equal to the rate of April, 1923, the record for all time. Elsewhere it is stated that the production is 28 per cent above the average in the five post-war years, 1919 to 1923 inclusive. Due to heavy shipments to Japan for reconstruction work, the exports of iron and steel from the United States in January amounted to 249,126 tons, the greatest tonnage shipped abroad in any month since February, 1921.

Tin. The European speculation in metals, due to the recovery of the French franc, had a particular effect upon the tin market, where sensational declines in prices occurred. In one day the London market prices for spot standard dropped £20. American importations of tin during the year 1923 at 68,690 tons surpassed any previous year.

Zinc. The reaction which set in a few weeks ago still continues, and there is little demand for this metal. Prices for slab zinc improved during the last half of March by $2 a ton. It is believed that eventually some of the European countries, notably England, must turn to the United States for their zinc supplies.

Basic Metals

March 26, 1924

Aluminum, virgin, 98@99 per cent	28.00	@	29.00
Antimony, pound	11.75	@	12.00
Copper—Lake, spot, pound	.14	@	...
Electrolytic, spot	.13¾	@	.14
Casting refinery	.13⅜	@	...
Lead, spot, New York, pound	9.00	@	9.12
Lead, spot, East St. Louis	8.75	@	9.00
Nickel, ingot, pound	.29	@	.32
Tin, spot	.53½	@	...
Zinc, spot, New York	6.75	@	6.80
Zinc, spot, East St. Louis	6.40	@	6.45

Steel Wire

Base Price* on No. 9 Gage and Coarse	Cents per pound		
Bright basic	4.50	@	4.75
Annealed soft	4.50	@	4.75
Galvanized annealed	5.15	@	5.40
Coppered basic	5.15	@	5.40
Tinned soft Bessemer	6.15	@	6.40

*Regular extras for lighter gage.

Copper Wire

	F. O. B. Factory		
Bare copper wire, *lb.*	*.16½	@	...
No. 6 B. & S. gage, *lb.*	*.16½	@	...
No. 8 B. & S. gage, *lb.*	*.16½	@	...
No. 14 B. & S. gage, *lb.*	.17½	@	...

*Base price.

The Market for Chemicals and Compounding Ingredients

New York

Trade in compounding ingredients has been of good proportions although manufacturers were declining to make heavy commitments for supplies of rubber materials beyond a few weeks ahead.

Carbon Black. Early in the month market conditions were unsettled, owing to excessive stocks at production centers. Later, distressed lots disappeared with improvement in demand of tire makers and prices became firmer, ruling from 8 to 10 cents for carload lots. Gas shortage in Louisiana has caused the state authorities to warn carbon black producers that production may be stopped on ninety days' notice to conserve the gas supply for other uses.

Fillers. Trade in the popular fillers for rubber compounding is running into tonnage of increasing volume, notably in the cases of clay, whiting, aluminum flake and asbestine. There is a great choice in clays for rubber work. Selection of the best grade and its careful preparation are essential. Of all the high grade clay produced only about one per cent is used in rubber goods manufacture.

In whiting a price cutting war is in progress between new and old producers contending for the rubber trade. It is well to remember, however, that discrimination should be exercised as to quality and adaptation even with regard to whiting.

Lead Pigments. Litharge and sublimed lead are steady at 11½ cents a pound, an increase of ¼ cent over the prices of a month ago. This advance, due to increase in cost of production, in no wise affected the demand, which is improving.

Lithopone. This material has advanced fractionally. Producers are very much sold ahead.

Organic Accelerators. All the popular organic accelerators are in active demand. The tendency is to restrict the choice to a few kinds for special results under typical conditions.

A typical selection of accelerators would include aniline, diphenyl, guanidine, ethyledene aniline, hexamethylene tetramine, supersulphur, thiocarbonilide, quinoidine, and a few others. Since they are used for specific chemical effect and in small percentages, the matter of price is of very little moment. All, however, are in good supply at firm and steady prices.

Softeners, Mineral Rubbers and Hydro-Carbons. These materials are all in good supply, of standard grades at staple prices. They are widely applicable and indispensable.

Zinc Oxide. Tire makers are taking supplies steadily on contracts. Consumption is rated at normal and increasing seasonally as tire making schedules advance toward peak production. In anticipation of spring requirements zinc oxide is in heavy production to meet the seasonal needs of the paint and rubber trade. Makers are advising consumers to place their orders for shipment at least two weeks in advance of their manufacturing needs to insure timely delivery. Prices remain unchanged from a month ago.

New York Quotations

March 26, 1924

Accelerators, Inorganic			
Lead, carbonate	lb.	$0.10¼	@
Lead, red	lb.	.12	@
sublimed blue	lb.	.09¾	@
sublimed white	lb.	.09¾	@
Lime, flour	lb.	.02½	@
R. M. hydrated	ton	25.00	@
superfine	lb.	.02	@
Litharge, domestic	lb.	*.10½	@ .12½
imported	lb.	*.17	@
Magnesia, carbonate, light	lb.	.07½	@ .09
calcined, light (bbls.)	lb.	.15	@ .24
calcined, ex. light (bbls.)	lb.	.40	@
calcined, md. light (bbls.)	lb.	.15	@
calcined, heavy (bbls.)	lb.	.03¾	@ .06
Orange mineral A.A.A.	lb.	.15	@
Rubber lead	lb.	.10	@
Accelerators, Organic			
A-7	lb.	.75	@ .85
A-19	lb.	.85	@ .95
Accelemal	lb.	.30	@
Accelerene (f. o. b. English port)	lb.	13s.	@
Aldehyde ammonia powder	lb.	.95	@
Aniline (f. o. b.) factory	lb.	.17½	@ .18½
sulphate	lb.	.33	@ .35
Cryline	lb.	.60	@
Diphenyl diamino carbazol	lb.	.65	@
Diphenylguanidine	lb.	1.10	@ 1.15
Ethylidene aniline	lb.	.70	@ .75
Excellerex	lb.	.40	@ .45
Formaldehyde aniline	lb.	.47½	@
H. B.	lb.	1.40	@ 1.50
Hexamethylene tetramine	lb.	.85	@
Lead oleate (bbls.)	lb.	.15	@
Methylene aniline	lb.	.35	@ .40
No. 999	lb.	.16	@
Paraldehyde	lb.	.17	@ .19
Para-nitros-dimethyl aniline	lb.	.35	@
Paraphenylene diamine	lb.	1.40	@ 1.50
Quinodine	lb.	$0.55	@
Super-sulphur, No. 1	lb.	.50	@ .60
No. 2	lb.	.25	@ .35
Super-X	lb.	.30	@
Tuads (Tetramethyl thiuram-disulphide)	lb.	6.00	@
Thiocarbanilide	lb.	.27	@ .33
Triphenylguanidine	lb.	.70	@ .75
Acids			
Acetic 28% (bbls.)	cwt.	3.38	@
glacial (carboys)	lb.	.16	@
Cresylic (95% straw color)	gal.	.73	@ .78
(95 dark)	gal.	.65	@ .70
Sulphuric, 66 degrees	lb.	.02	@
Alkalies			
Caustic soda	cwt.	3.10	@ 3.86
flake, 76% (factory)	cwt.	3.60	@ 3.85
solid, 76% (factory)	cwt.	3.15	@
Colors			
BLACK			
Bone	cwt.	7.80	@ 8.25
Carbon black	lb.	.08	@ .14
compressed	lb.	.08½	@ .15
Drop	cwt.	7.80	@ 8.25
Gritless black	lb.	.40	@
Ivory black	lb.	.15	@ .45
Lampblack	lb.	.14	@
Micronex	lb.	.09	@ .15
Shawinigan	lb.	.17	@ .18
BLUE			
Cobalt	lb.	.21	@ .26
Gritless blue	lb.	2.00	@ 4.00
Prussian	lb.	.55	@ .60
Ultramarine	lb.	.15	@ .35
T. K.	lb.	.25	@ .30
BROWN			
Iron oxide	lb.	.04½	@ .05½
Sienna, Italian	lb.	.05	@ .06
Umber, Turkey	lb.	.05½	@ .06
GREEN			
Chrome, light	lb.	$0.28	@ $0.31
medium	lb.	.30	@ .35
dark	lb.	.32	@ .42
commercial	lb.	.12	@
tile	lb.	.13	@ .15
Gritless green	lb.	2.00	@ 3.00
Oxide of chromium	lb.	.36	@ .55
T. K.	lb.	.45	@
RED			
Antimony, golden	lb.	.20	@ .22
golden T. K.	lb.	.22	@
golden R.M.P. No. 7	lb.	.20	@
golden, 15/17% G. E.	lb.	.40	@ .42
golden, 15/17% F. S.	lb.	.18	@
golden, No. 1	lb.	.30	@
golden, No. 2	lb.	.20	@
Tideco	lb.	.22	@ .52
Antimony, crimson	lb.	.45	@ .50
crimson T. K.	lb.	.48	@
crimson, 15/17% G. E.	lb.	.20	@ .22
crimson, 15/17% F. S.	lb.	.39	@
crimson, R.M.P. No. 3	lb.	.50	@
crimson F.	lb.	.35	@ .45
7-A	lb.	.35	@
Golden pentasulphide T. K.	lb.	.32	@ .35
Vermilion, 5% F. S.	lb.	.65	@
Vermilion 15/17% F.S.	lb.	.50	@
T. K.	lb.	1.20	@ 1.25
Arsenic-sulphide, red	lb.	.14¾	@
Gritless red (four shades)	lb.	1.50	@ 3.00
purple	lb.	2.00	@ 3.00
Indian maroon, English	lb.	.11	@ .12
Iron oxide, domestic	lb.	.08	@ .12
English	lb.	.12	@ .14
Indian	lb.	.11	@ .12
pure bright	lb.	.12	@ .14
reduced	lb.	.08	@ .10
Spanish	lb.	.02¼	@ .04
Venetian	lb.	.02¾	@ .06
Oximony	lb.	.16	@
Pará toner	lb.	1.00	@ 1.10
Toluidine toner	lb.	2.20	@ 2.75
Vermilion, English	lb.	1.35	@ 1.40

*Nominal.

Colors—*Continued*

WHITE

Albalith	lb.	$0.06¾@$0.07⅛
Aluminum bronze	lb.	.55 @ .60
Lithopone	lb.	.06½@ .07⅛
Lithopone, Sterling	lb.	.06¾@ .07
Azo	lb.	.06⅜@ .06¾
R. S. L.	lb.	.07 @
Red Seal, imported	lb.	.06¾@ .07¼
T. O. Pigment L. H. B.	lb.	.15½@ .16¼
Zinc oxide:		
AAA, lead free	lb.	.08 @ .08¼
Azo (factory):		
ZZZ (lead free)	lb.	.08 @ .08¼
ZZ (—5% leaded)	lb.	.07⅛@ .07⅜
Z (8.10% leaded)	lb.	.07⅛@ .07⅜
French process, Florence brand		
Green seal	lb.	.11 @ .11¾
Red seal	lb.	.10 @ .10¾
U. S. P.	lb.	.16 @ .18
White seal	lb.	.12 @ .12¾
Horse Head brands		
Selected	lb.	.08¾@ .08¾
Special	lb.	.08⅜@ .08¾
XX red	lb.	.08⅛@ .08⅜
Leaded brands		
Lehigh	lb.	.07¼@ .07½
Standard	lb.	.07¼@ .07½
Sterling	lb	.07¼@ .07½
Superior	lb.	.07¼@ .07½
Palmerton process		
Kadox, black	lb.	.12 @ .12¼
blue	lb.	.11 @ .11¼
red	lb.	.10 @ .10¼
Snow white	lb.	.12 @

YELLOW

Arsenic	lb.	.75 @
Chrome	lb.	.21 @
Gritless yellow	lb.	2.50 @ 4.00
India rubber	lb.	.75 @
Ochre, domestic	lb.	.02 @ .02½
imported	lb.	.02¼@ .03½

Compounding Ingredients

Aluminum flake (carloads)	ton	29.00 @
filler	ton	23.00 @
hydrate, light	lb.	.17 @ .18
Ammonia carbonate	lb.	.09¼@ .10½
Asbestine	ton	20.00 @25.00
Aluminum silicate	ton	22.00 @25.00
Barium, carbonate, precip.	ton	85.00 @90.00
dust	lb.	.05 @ .06
Barytes, imported	ton	28.00 @33.00
pure white C. L.	ton	23.90 @
off color	ton	20.00 @
uniform floated	ton	23.90 @
water ground and floated	ton	23.00 @26.00
Basofor	lb.	.04¼@
Blanc fixe	lb.	.04 @ .04¼
Carrara filler (factory)	lb.	.02 @
Chalk, precip. extra light	lb.	.04½@ .05
heavy (f.o.b. factory)	lb.	.03¼@ .04
Clay, Dixie	ton	22.00 @35.00
Blue ribbon (carloads)	ton	14.00 @
Blue Ridge	ton	12.00 @26.00
L. H. B. (factory)	ton	22.50 @
Tideco (factory)	ton	10.00 @
Cotton flock, black	lb.	.11 @ .12
light-colored	lb.	.12 @ .14
white	lb.	.14 @ .21
Cotton linters clean mill-run	lb.	.06 @
Fossil flour (powdered)	ton	60.00 @
(bolted)	ton	60.00 @

* Nominal.

Chemical Market—*Continued*

New York Quotations

March 26, 1924

Glue, high grade	lb.	$0.30 @$0.40
medium	lb.	.20 @ .26
low grade	lb.	.15 @ .18
Graphite, flake	lb.	.06½@ .12
Infusorial earth (powd.)	ton	60.00 @
(bolted)	ton	65.00 @
Lime (bolted)	lb.	.02 @
Mica, amber	lb.	.05 @
powdered	lb.	*.15 @
white	lb.	.06 @
Pumice stone, powdered	lb.	.03 @ .05
Rotten st., powd. (bbls.)	lb.	.02½@ .04½
Slate flour (factory)	ton	9.00 @20.00
Soap bark, cut	lb.	.09¼@ .09¾
Soapstone, powdered, gray	ton	12.00 @20.00
Sodium bicarbonate (bbls.)	lb.	.02¼@
Starch, powd. corn (bags)	cwt.	3.27 @ 3.37
(bbls.)	cwt.	3.54 @ 3.64
Talc, soapstone	ton	22.50 @
Terra blanche	ton	27.00 @30.00
Whiting, Alba	cwt.	@
chalk, L. H. B.	ton	16.50 @25.00
commercial	cwt.	.90 @ 1.00
English, cliffstone	cwt.	1.50 @ 1.75
gilders (bolted)	cwt.	1.15 @
K. T.	ton	@
Perfection	ton	13.00 @25.00
Quaker	ton	13.00 @22.00
Superfine, L. H. B.	ton	12.50 @22.50
Sussex	ton	8.00 @16.00
Witco	ton	20.00 @
York	ton	12.00 @
Wood pulp, XXX	ton	35.00 @
X (f. o. b. factory)	ton	25.00 @

Mineral Rubber

Genasco (factory)	ton	50.00 @52.00
Gilsonite	ton	65.00 @
Hard hydrocarbon	ton	31.00 @50.00
Liquid rubber	lb.	.10 @
Ohmlac Kapak, K-R	ton	50.00 @60.00
K-4	ton	175.00 @
Parra M. R. flux	lb	.06 @ .07
Soft hydrocarbon	ton	30.00 @50.00
320/340 M. P. hydrocarbon	ton	45.00 @50.00
300/310 M. P. hydrocarbon	ton	40.00 @45.00
Pioneer, M. R., solid (fac.)	ton	42.00 @44.00
M. R. granular	ton	52.00 @54.00
Robertson, M. R., solid	ton	35.00 @75.00
M. R. granular (factory)	ton	42.00 @80.00
Rubrax (factory)	ton	60.00 @
Synpro, gran. M. R. (fac.)	ton	55.00 @

Resins and Pitches

Tar, pine, retort	bbl.	11.00 @11.75
kiln	bbl.	11.75 @12.00
Pitch, Burgundy	lb.	.05 @
coal tar	bbl.	5.00 @
Fluxol hardwood	lb.	.03 @ .04
pine tar	bbl.	7.00 @
ponto	lb.	.06 @
Rosin, K (bbl.)	280 lbs.	6.10 @
strained (bbl.)	280 lbs.	5.95 @
Shellac, fine orange	lb.	.75 @ *.90
substitute	gal.	2.00 @

Softeners

Avoilas compound	lb.	.14 @
Castor, No. 1, U. S. P.	lb.	.15½@
No. 3, U. S. P.	lb.	.15 @
Corn, crude (bbls.)	lb.	.11¼@
Cotton	lb.	.10 @
Cycline	gal.	$0.35 @$0.38
Glycerine	lb.	.16½@ .17
Linseed, raw	gal.	.92 @
Palm lagos	lb.	.08 @
oil clarified L. H. B.	lb.	.10 @
Palm, niger	lb.	.07½@
Peanut, crude	lb.	.14 @
refined	lb.	.16 @
Petrolatum, standard	lb.	.06 @ .08
Petrolatum, sticky	lb.	.08 @ .10
Pine, steam distilled	gal.	.62 @ .63
Rapeseed, refined	gal.	.90 @
blown	lb.	.12½@
Resin	gal.	$0.47 @$0.50
Synpro	gal.	@
Soya bean	lb.	.12 @
Tar	gal.	.26 @
Woburn	lb.	.05 @
Woolgrease (Lanolin)	lb.	.10 @ .10½

Solvents

Acetone (98.99% drums [6.62 lbs. per gal.])	lb.	.25 @ .25½
Benzol (90% drums [7.21 lbs. per gal.])	gal.	.26 @ .31
pure (drums)	gal.	.42 @
Carbon bisulphide (dms. [10.81 lbs. per gal.])	lb.	.06½@ .07½
tetrachloride (drums, [13.28 lbs. per gal.])	lb.	.08½@ .10
Hartol No. 303		
Tankcars	gal.	.21 @
Drums, carlots	gal.	.24 @
Drums, less carlots	gal.	.27 @
Motor gasoline (steel bbls.)	gal.	.19½@
Naphtha, V. M. & P.	gal.	.18 @
solvent (drums extra)	gal.	.27 @
68° Bé., 122°, 324°	gal.	.18½@
70° Bé., 114°, 314°	gal.	.19½@
71° Bé., 112°, 304°	gal.	.20½@
Cymene (factory)	gal.	2.00 @ 2.50
Toluol, pure (7.21 lbs. per gal.)	gal.	@
Turpentine, spirits	gal.	1.02 @
wood, steam distilled	gal.	.92 @

Substitutes

Black	lb.	.08 @ .14
Brown	lb.	.10 @ .15
White	lb.	.09 @ .16
Brown factice	lb.	.09 @ .16
White factice	lb.	.09 @ .15
T. K., various	lb.	.12 @ .15

Vulcanizing Ingredients

Black hypo, T. K., S. F.	lb.	.18 @
13% F. S., L. H. B.	lb.	.20 @
Sulphur chloride	lb.	.08 @ .13½
Sulphur, Bergenport brand, 100% pure (bbls.)	cwt.	2.60 @ 3.15
(bags)	cwt.	2.35 @ 2.90
Sulphur, Bklyn bd. (bbls.)	cwt.	2.75 @ 3.30
superfine com. (bgs.)	cwt.	2.00 @ 2.50
(bbls.)	cwt.	2.40 @ 2.90
Rubber makers	lb.	.03½@ .04

(See also Colors—Antimony)

Waxes

Wax, beeswax, white, com.	lb.	.40 @ .45
ceresine, white	lb.	.10 @ .12
carnauba	lb.	.19 @
montan	lb.	.05 @ .05½
ozokerite, black	lb.	.18 @ .24
green	lb.	.27 @ .28
sweet wax	lb.	.12 @

Paraffin

122/124 white crude scale	lb.	.05½@
124/126 white crude scale	lb.	.05¾@
120/122 fully refined	lb.	.04½@ .04¾
125/127 fully refined	lb.	.05 @ .05¼

BLACK FROM OLD TIRES

The manufacture of lampblack from discarded automobile tires is soon to be attempted on a commercial scale. The inventor of the process, Lee Mettler, combustion engineer, Los Angeles, California, claims that an average tire burned in his apparatus yields about 4½ pounds of black. Waste rubber will always be available for this purpose at nominal cost.

The tendency of legislatures to conserve natural gas resources by restricting the use of gas in the manufacture of carbon black, will, in the opinion of the inventor, call for new sources of black for the rubber and other industries. Black from waste rubber tires is said to show stronger pigmenting power than black from any other carbonizing process, and to be adapted to every use for which carbon black is now employed.

N.A.W.M.D. HOLDS ELEVENTH ANNUAL BANQUET

On March 19 the National Association of Waste Material Dealers, Inc., held its eleventh annual banquet at the Hotel Astor, New York, N. Y. Harry R. DeGroat, president of the organization, presided as toastmaster, and addresses, following the banquet, were made by several men of prominence.

Scrap Rubber Division Holds Meeting

There was a good attendance on March 18 at the meeting of the Scrap Rubber Division, which was also held at the Hotel Astor. Several questions of interest to the industry were discussed, particularly the problem of securing lower freight rates covering scrap rubber. Nat E. Berzen was reelected chairman of the division.

Exports of India Rubber Manufactures from the

EXPORTED TO—	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Waterproofed Auto Cloth Value	Waterproofed Clothing Value
EUROPE													
Austria	.....	.....	.....	.....	.....	.....	120	$71	.....	.....	.....	.....	.....
Azores and Madeira Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	$31	.....	.....
Belgium	$782	$1,463	$1,177	.....	492	$1,060	.....	.....	.....	.....	226	$3,422	$43
Czechoslovakia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Denmark	266	202	197	.....	5,432	13,419	8,539	8,468	312	$277	.....	5,135	.....
Finland	6,260	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
France	3,081	576	686	$11,438	48	96	192	367	.....	.....	.....	777	.....
Germany	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	114	.....	.....
Greece	.....	354	.....	.....	.....	.....	.....	.....	.....	.....	63	102	.....
Hungary	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Iceland and Faroe Islands	.....	.....	.....	.....	.....	.....	1,828	2,927	.....	.....	.....	.....	.....
Italy	1,715	50	.....	.....	394	1,112	84	140	120	110	161	117	.....
Latvia	373	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lithuania	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Malta, Gozo, and Cyprus Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Netherlands	.....	3,011	313	.....	.....	.....	.....	.....	.....	.....	582	307	.....
Norway	2,676	1,277	.....	.....	542	787	4,680	3,266	.....	.....	199	974	.....
Portugal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	217	.....	.....
Rumania	.....	224	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Russia in Europe	.....	100	.....	.....	.....	.....	.....	.....	.....	.....	65	.....	.....
Spain	192	64	361	4,092	588	1,764	1,572	1,636	.....	.....	335	.....	.....
Sweden	230	67	369	.....	71	209	299	483	.....	.....	.....	.....	.....
Switzerland	.....	.....	500	.....	.....	.....	2,006	1,694	1,004	818	.....	1,284	.....
Ukraine	.....	.....	23	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
England	8,060	30,165	5,155	17,624	10,333	22,069	15,091	14,661	15,113	11,519	1,113	18,765	220
Scotland	469	2,726	.....	.....	1,568	3,493	.....	.....	1,200	1,548	.....	.....	870
Ireland	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7
Yugoslavia, Albania, etc	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, EUROPE	$24,104	$40,279	$8,781	$33,154	19,468	$44,009	34,411	$33,713	17,749	$14,272	$3,106	$30,883	$1,140
NORTH AMERICA													
Canada—Maritime Provinces	$12,844	$9,075	$7,460	$5,446	2,031	$4,543	8,654	$8,304	1,965	$2,205	$1,516	$12,688	$2,352
British Honduras	62	.....	.....	.....	.....	.....	.....	.....	264	298	68	.....	.....
Costa Rica	694	919	16	.....	.....	.....	48	44	113	135	387	.....	548
Guatemala	591	114	.....	.....	.....	.....	48	112	2,534	1,936	736	78	19
Honduras	52	1,356	252	.....	.....	.....	30	115	370	391	1,424	.....	347
Nicaragua	436	554	174	.....	48	150	36	36	434	528	801	.....	115
Panama	173	22,019	1,778	.....	12	39	.....	.....	1,728	913	1,275	36	211
Salvador	188	120	82	.....	.....	.....	.....	.....	.....	.....	3,795	.....	13
Mexico	14,638	17,223	8,088	.....	250	934	450	519	5,830	5,154	6,434	2,290	2,289
Newfoundland and Labrador	.....	76	.....	.....	4,534	11,277	3,741	2,198	3,797	2,259	64	.....	136
Bermuda	255	391	.....	.....	.....	.....	.....	.....	154	218	237	219	42
Barbados	.....	.....	.....	.....	.....	.....	.....	.....	144	114	.....	67	.....
Jamaica	2,198	210	938	.....	.....	.....	.....	.....	1,084	1,088	102	297	45
Trinidad and Tobago	.....	319	226	.....	.....	.....	.....	.....	220	174	.....	360	.....
Other British West Indies	25	278	35	.....	.....	.....	.....	.....	1,467	1,560	125	.....	38
Cuba	1,135	8,499	5,034	23	140	374	48	104	29,664	21,773	6,353	1,484	11,304
Dominican Republic	137	701	251	.....	.....	.....	.....	.....	1,252	947	607	.....	72
Dutch West Indies	.....	28	.....	.....	2	11	.....	.....	3,304	2,369	.....	.....	394
Haiti	58	133	35	.....	.....	.....	.....	.....	1,312	1,365	271	98	.....
Virgin Islands of United States	.....	.....	.....	.....	.....	.....	.....	.....	96	144	.....	.....	.....
TOTALS, NORTH AMERICA	$33,486	$62,015	$24,369	$5,469	7,017	$17,328	13,055	$11,432	55,732	$43,571	$24,195	$17,617	$17,925
SOUTH AMERICA													
Argentina	$6,249	$14,398	$1,778	.....	11	$29	82	$88	23,266	$17,463	$716	$11,706	$1,780
Bolivia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	389	185
Brazil	1,644	966	79	.....	51	254	5,182	3,916	.....	.....	.....	.....	.....
Chile	15,423	2,236	603	.....	28	100	1,890	1,488	.....	.....	.....	.....	.....
Colombia	702	796	146	$196	.....	.....	48	44	2,612	2,623	2,199	775	455
Ecuador	.....	292	1,453	.....	6	21	.....	.....	1,705	1,009	116	.....	.....
British Guiana	.....	15	349	.....	.....	.....	.....	.....	552	430	.....	.....	33
Dutch Guiana	.....	.....	33	.....	.....	.....	.....	.....	.....	.....	.....	.....	18
Paraguay	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Peru	4,344	4,229	479	.....	204	749	380	346	168	276	148	159	459
Uruguay	1,953	23	45	.....	.....	.....	.....	.....	5,279	3,252	1,113	466	.....
Venezuela	249	434	552	.....	.....	.....	.....	.....	.....	.....	1,733	154	150
TOTALS, SOUTH AMERICA	$30,564	$23,389	$5,517	$196	300	$1,153	7,582	$5,882	33,582	$25,053	$6,025	$13,649	$3,080
ASIA													
Armenia and Kurdistan	.....	$397	.....	.....	.....	.....	1,650	$1,600	24	$13	.....	$460	.....
British India	$2,926	2,803	$337	.....	.....	.....	.....	.....	1,221	1,197	.....	433	.....
Ceylon	.....	97	.....	.....	.....	.....	72	42	24	44	.....	611	.....
Straits Settlements	.....	151	336	.....	.....	.....	.....	.....	574	411	.....	288	.....
China	799	35	368	$6,377	.....	.....	552	367	7,788	9,084	$282	5,061	$1,050
Chosen	.....	.....	.....	.....	.....	.....	168	166	.....	.....	.....	.....	.....
Java and Madura	314	958	715	.....	.....	.....	.....	.....	124	153	69	3,011	.....
Other Dutch East Indies	190	912	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	300
Hongkong	620	10	570	.....	.....	.....	240	221	4,080	3,696	132	.....	.....
Japan	14,158	6,070	16,606	38,440	16,088	$34,241	47,548	42,219	.....	.....	.....	1,899	.....
Kwangtung, leased territory	183	.....	761	.....	.....	.....	.....	.....	6,692	4,803	.....	1,392	.....
Palestine and Syria	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Persia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Philippine Islands	7,005	7,014	2,225	.....	.....	.....	.....	.....	59,090	45,697	15,340	2,838	11,938
Siam	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Turkey in Asia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, ASIA	$26,195	$18,447	$21,918	$44,817	16,088	$34,241	50,230	$44,615	79,617	$65,098	$15,823	$15,993	$13,288

United States by Countries During January, 1924

Pneumatic Casings			Solid Tires		Pneumatic Tubes				Hard Rubber Goods						
Automobile			Automobile and Motor Truck		Automobile										
Number	Value	Others Value	Value	Others Value	Number	Value	Others Value	Tire Repair Materials Value	Battery Jars and Accessories Value	Other Electrical Supplies Value	Others Value	Rubber Water Bottles and Fountain Syringes Value	Other Druggists' Rubber Sundries Value	Bathing Caps Value	Rubber Toys, Balls and Balloons Value
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1,785	$13,670	$50	.....	.....	1,736	$2,027	$4	$410	.....	.....	.....	$191	.....	.....	.....
40	949	.....	.....	.....	.....	.....	.....	61	.....	.....	.....	.....	.....	$164	.....
3,992	45,425	372	$1,686	.....	3,284	5,155	4	215	.....	.....	.....	.....	$791	1,290	.....
190	2,705	.....	.....	.....	171	476	.....	401	.....	.....	.....	.....	.....	.....	.....
462	7,167	.....	.....	.....	3	21	.....	151	.....	$1,579	$152	.....	817	3,652	.....
39	450	.....	.....	.....	89	252	.....	.....	.....	.....	.....	.....	.....	.....	.....
36	794	.....	731	$262	20	46	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	162	.....	.....	.....	.....	.....	.....	.....
364	4,004	.....	.....	.....	749	1,124	.....	149	.....	.....	.....	.....	.....	.....	.....
155	1,697	.....	.....	.....	75	109	.....	.....	.....	.....	.....	126	128	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	545	.....	.....	.....	.....	.....	.....	.....
20	140	.....	.....	.....	28	42	.....	.....	.....	.....	.....	.....	.....	.....	$81
1,690	24,490	1,291	4,061	.....	1,500	3,039	217	.....	.....	.....	1,100	63	333	4,320	696
506	7,724	.....	1,941	.....	625	1,069	.....	1,196	.....	.....	.....	.....	159	159	1,403
310	3,965	.....	633	.....	249	431	.....	.....	.....	.....	.....	.....	.....	.....	.....
4	33	.....	.....	.....	8	8	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
361	7,381	1,447	9,092	.....	45	281	27	.....	.....	.....	.....	.....	281	.....	.....
631	8,795	.....	960	.....	251	475	.....	47	.....	.....	.....	.....	.....	1,029	435
204	5,111	.....	.....	.....	126	397	.....	53	.....	.....	.....	.....	.....	644	.....
66	816	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13,430	161,990	.....	144,783	.....	10,003	14,348	.....	2,242	$804	1,711	17,034	1,365	9,849	454	24,337
.....	.....	.....	9,481	.....	12	75	.....	.....	.....	.....	.....	.....	.....	.....	2,063
120	1,083	.....	.....	.....	12	13	.....	.....	.....	.....	.....	.....	.....	.....	.....
70	706	.....	120	.....	80	130	.....	.....	.....	.....	.....	.....	.....	.....	.....
24,475	$299,095	$3,160	$173,488	$262	19,066	$29,518	$252	$5,632	$804	$3,290	$18,286	$1,745	$12,358	$11,712	$29,015
1,139	$22,238	$283	$7,853	$744	1,389	$5,372	$54	$1,795	$3,159	$3,489	$7,335	$1,051	10,408	$715	$6,657
14	131	.....	.....	.....	20	21	.....	.....	.....	.....	.....	3	50	11	.....
110	1,335	.....	1,305	.....	86	127	.....	.....	.....	.....	.....	.....	.....	.....	.....
150	2,959	.....	53	193	104	249	.....	.....	.....	.....	.....	.....	.....	.....	41
44	420	13	.....	.....	32	53	.....	.....	.....	.....	.....	.....	.....	3	11
70	989	.....	.....	.....	159	272	.....	50	.....	.....	51	4	80	.....	9
651	8,590	219	1,859	147	665	1,190	12	103	.....	25	322	.....	212	31	45
221	4,291	.....	233	.....	185	441	.....	.....	.....	.....	41	.....	60	.....	471
2,266	22,216	590	1,452	854	1,302	2,625	45	502	20	361	729	87	1,120	.....	416
3	94	.....	.....	.....	4	16	.....	165	.....	.....	.....	.....	29	.....	99
.....	.....	.....	.....	149	.....	.....	.....	.....	.....	.....	.....	99	78	146	.....
14	109	.....	.....	.....	12	14	.....	11	.....	.....	.....	.....	.....	.....	.....
406	4,767	3	1,632	168	417	739	357	86	.....	1	.....	.....	51	9	17
384	4,178	.....	512	.....	272	451	.....	.....	.....	121	.....	.....	147	.....	.....
49	594	75	94	93	91	138	.....	.....	.....	117	40	97	45	.....	.....
3,182	42,952	1,587	9,028	279	7,140	12,529	50	1,292	.....	61	482	893	4,232	.....	982
844	7,476	166	482	224	600	1,421	68	85	.....	.....	134	.....	125	.....	58
166	1,418	.....	.....	.....	186	339	.....	12	.....	.....	.....	.....	.....	.....	.....
70	1,526	37	.....	.....	137	245	15	98	29	.....	.....	.....	.....	.....	.....
78	763	.....	.....	.....	69	139	.....	4	.....	.....	.....	.....	76	.....	.....
9,861	$131,047	$2,973	$24,503	$2,851	12,870	$26,381	$601	$4,203	$3,208	$4,175	$9,135	$2,234	$16,713	$915	$8,806
3,764	$44,933	.....	$3,206	$2,208	8,912	$16,710	$237	$2,717	$410	$1,247	$106	$264	$4,809	.....	$1,225
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	664
1,340	11,342	$6,910	1,013	.....	3,190	4,803	780	177	.....	568	686	.....	.....	$69	462
446	5,382	.....	1,083	399	230	810	.....	421	.....	.....	305	168	337	.....	680
686	10,108	274	1,029	.....	965	2,179	49	452	.....	.....	.....	.....	621	.....	410
169	2,489	.....	.....	.....	191	422	.....	.....	.....	.....	.....	.....	.....	.....	338
54	725	.....	386	66	29	166	.....	92	.....	.....	.....	.....	112	.....	72
72	492	.....	.....	.....	10	39	.....	.....	.....	.....	.....	.....	.....	.....	.....
50	428	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
391	6,438	208	1,622	.....	869	1,677	17	.....	.....	.....	99	.....	378	.....	89
1,467	16,511	.....	68	.....	998	1,719	.....	7	.....	172	.....	.....	252	.....	112
1,561	16,055	93	.....	20	1,409	2,417	12	137	.....	35	234	112	253	.....	990
10,000	$114,903	$7,485	$8,407	$2,693	16,803	$30,942	$1,095	$4,003	$410	$2,022	$1,430	$544	$6,762	$69	$5,042
.....	.....	.....	.....	.....	.....	.....	.....	$34	.....	.....	.....	.....	.....	.....	.....
2,051	$20,114	.....	$2,451	$5,924	1,585	$2,119	$8	.....	$75	.....	$274	.....	$169	.....	$990
317	3,388	.....	1,069	.....	134	282	.....	53	.....	.....	.....	$20	.....	.....	.....
552	4,770	.....	784	.....	398	849	.....	.....	.....	.....	.....	.....	.....	.....	.....
365	3,483	$42	532	101	358	1,225	.....	35	.....	.....	392	275	1,692	$54	307
320	2,796	.....	100	.....	100	102	.....	.....	.....	.....	.....	.....	.....	.....	.....
1,193	13,373	.....	1,886	1,541	2,385	3,139	136	50	.....	.....	23	.....	.....	.....	.....
76	840	.....	1,166	.....	84	120	.....	.....	.....	.....	.....	.....	.....	.....	.....
266	3,446	.....	.....	1,533	256	514	.....	246	.....	.....	.....	.....	31	72	.....
10,983	130,266	5,589	57,179	.....	15,431	31,230	823	2,746	17	.....	225	.....	2,168	.....	.....
40	400	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
166	2,315	.....	50	.....	35	83	.....	385	.....	.....	.....	48	.....	.....	.....
40	382	.....	.....	.....	1,900	3,371	182	.....	.....	.....	.....	.....	.....	.....	.....
3,728	42,207	819	14,022	9,374	.....	.....	.....	870	.....	.....	.....	1,022	863	.....	181
20	725	.....	.....	75	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	324	.....	.....	.....	.....	.....	.....	.....
20,117	$228,505	$6,450	$79,239	$18,548	22,666	$43,034	$1,149	$4,743	$92	.....	$914	$1,365	$4,923	$126	$1,478

Exports of India Rubber Manufactures from the

EXPORTED TO—	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Waterproofed Auto Cloth Value	Waterproofed Clothing Value
OCEANIA													
Australia	$12,674	$6,661	$3,465	.....	.....	.....	288	$300	139	$202	.....	$4,470	$2,579
British Oceania	.....	.....	.....	.....	.....	.....	.....	.....	182	144	.....	.....	.....
French Oceania	.....	38	.....	.....	.....	.....	.....	.....	792	762	$20	.....	.....
New Zealand	1,458	1,485	2,020	.....	2,676	$8,522	988	1,581	.....	.....	.....	337	4,488
Other Oceania	.....	69	.....	.....	.....	.....	.....	.....	194	242	.....	23	.....
TOTALS, OCEANIA	$14,132	$8,253	$5,485	.....	2,676	$8,522	1,276	$1,881	1,307	$1,350	$20	$4,830	$7,067
AFRICA													
British West Africa	$11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British South Africa	14,074	$17,089	$2,954	$166	300	$1,081	1,670	$1,471	2,640	$4,219	$735	$1,253	.....
British East Africa	5,275	.....	150	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Canary Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Egypt	154	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	176	.....
Algeria and Tunis	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other French Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Liberia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	200
Morocco	144	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	213	.....
Portuguese East Africa	.....	.....	250	.....	36	117	.....	.....	96	84	421	.....	.....
Other Portuguese Africa	.....	.....	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Spanish Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, AFRICA	$19,658	$17,089	$3,365	$166	336	$1,198	1,670	$1,471	2,736	$4,303	$1,156	$1,642	$200
GRAND TOTALS	$148,139	$169,472	$69,435	$83,802	45,885	$106,451	108,224	$98,994	190,723	$153,647	$50,325	$84,614	$42,700

Rubber Statistics for the Dominion of Canada

Imports of Crude and Manufactured Rubber

	December, 1923 Pounds	December, 1923 Value	Nine Months Ended December, 1923 April-December Pounds	Nine Months Ended December, 1923 April-December Value
UNMANUFACTURED—*free*				
Rubber, gutta percha, etc.				
From United Kingdom	1,071	$284	2,656,799	$847,811
United States	1,263,081	334,702	12,913,582	3,600,933
Belgium	.....	.....	.....	.....
Brazil	.....	.....	.....	.....
British East Indies:				
Ceylon	.....	.....	.....	.....
Straits Settlements	85,120	16,992	3,739,972	1,099,057
Dutch East Indies	.....	.....	202,112	52,102
France	.....	.....	4,624	1,163
Other countries	.....	.....	116,052	27,536
Totals	1,349,272	$351,978	19,633,141	$5,628,602
Rubber recovered	97,116	8,803	1,923,146	184,717
Rubber, powdered and rubber or gutta percha scrap	118,361	2,835	2,694,563	95,348
Balata	545	429	7,079	6,196
Rubber substitutes	81,409	26,639	567,877	101,454
Totals, unmanufactured	1,636,703	$390,684	24,825,806	$6,016,317
PARTLY MANUFACTURED				
Hard rubber sheets and rods	6,761	$3,759	86,635	$57,348
Hard rubber tubes	.....	3,598	.....	16,715
Rubber thread, not covered	6,193	6,252	58,547	65,370
Totals, partly manufactured	12,954	$13,409	145,182	$139,433
MANUFACTURED				
Belting	.....	$11,982	.....	$111,714
Hose	.....	9,067	.....	96,745
Packing	.....	2,795	.....	36,319
Boots and shoes—*pairs*	10,675	12,038	109,743	157,816
Clothing, including waterproofed	.....	6,914	.....	135,592
Gloves	.....	1,621	.....	12,425
Hot water bottles	.....	1,898	.....	19,157
Tires, solid—*number*	8,858	4,421	19,794	67,749
Tires, pneumatic—*number*	2,129	34,712	65,270	674,484
Inner tubes—*number*	766	2,147	22,071	41,420
Elastic round or flat	.....	14,071	.....	211,416
Mats and matting	.....	1,172	.....	15,186
Cement	.....	3,509	.....	35,665
Other rubber manufactures	.....	98,738	.....	1,084,478
Totals, manufactured	.....	$205,085	.....	$2,700,166
Totals, rubber imports	.....	$609,178	.....	$8,855,916

Exports of Domestic and Foreign Rubber Goods

	December, 1923 Produce of Canada Value	December, 1923 Re-exports of Foreign Goods Value	Nine Months Ended December, 1923 April-December Produce of Canada Value	Nine Months Ended December, 1923 April-December Re-exports of Foreign Goods Value
UNMANUFACTURED				
Crude and waste rubber	$4,944	$13,260	$45,469	$46,669
Totals, unmanufactured	$4,944	$13,260	$45,469	$46,669
MANUFACTURED				
Belting	$28,619	.....	$184,995	.....
Canvas shoes, with rubber soles	98,004	.....	855,683	.....
Boots and shoes	78,010	.....	482,111	.....
Clothing, including waterproofed	1,855	.....	13,916	.....
Hose	11,797	.....	101,862	.....
Tires, casings	562,268	.....	4,306,772	.....
Inner tubes	56,571	.....	453,719	.....
Pneumatic	.....	.....	.....	.....
Solid	11,193	.....	90,844	.....
Vehicle	.....	$129	.....	$7,226
Other rubber manufactures	27,903	1,341	197,835	29,931
Totals, manufactured	$876,220	$1,470	$6,687,737	$37,157
Totals, rubber exports	$881,164	$14,730	$6,733,206	$83,826

British Malaya Rubber Exports

An official cablegram from Singapore states that the gross exports of rubber from British Malaya in the month of February, 1924, amounted to 19,395 tons. The amount of rubber imported was 7,440 tons, so that net exports amounted to 11,955 tons as compared with 15,818 tons in the corresponding month of last year.

Appended are the comparative statistics:

	1923 Gross Tons Export	1923 Net Tons Export	1924 Gross Tons Export	1924 Net Tons Export
January	22,871	18,513	23,848	14,981
February	19,907	15,818	19,395	11,955
Totals	42,778	34,331	43,243	26,936

United States Crude and Waste Rubber Imports for 1924 (By Months)

	Plantations	Parás	Africans	Centrals	Guayule	Manicoba and Matto Grosso	Total 1924	Total 1923	Balata	Miscellaneous	Waste
January—*tons*	20,611	731	181	88	.....	.....	21,611	31,197	23	249	95
February	29,977	1,501	192	93	.....	.....	31,763	24,220	47	799	53
Totals, 2 months, 1924—*tons*	50,588	2,232	373	181	.....	.....	53,374	.....	70	1,048	148
Totals, 2 months, 1923	51,169	3,237	857	154	.....	.....	.....	55,417	89	654	1,066

Compiled from statistics supplied by the Rubber Association of America, Inc.

United States by Countries During January, 1924—*Continued*

Pneumatic Casings			Solid Tires		Pneumatic Tubes			Tire Repair Materials Value	Hard Rubber Goods			Rubber Water Bottles and Fountain Syringes Value	Other Druggists' Rubber Sundries Value	Bathing Caps Value	Rubber Toys, Balls and Balloons Value
Automobile			Automobile and Motor Truck		Automobile				Battery Jars and Accessories Value	Other Electrical Supplies Value					
Number	Value	Others Value	Value	Others Value	Number	Value	Others Value				Others Value				
2,085	$23,303	.....	$24,089	$806	1,281	$2,058	.....	$1,370	$17	$91	$81	$125	$2,163	.....	$2,360
.....	.....	.....	.....	.....	24	36	.....	30	189	.....	.....	.....	.....	.....	.....
3	45	.....	.....	.....	.....	.....	.....	.....	33	.....	.....	.....	.....	.....	.....
2,619	31,580	.....	8,862	.....	644	1,457	.....	1,081	75	.....	.....	78	338	$50	293
45	505	.....	.....	.....	72	70	.....	.....	.....	.....	.....	.....	.....	.....	.....
4,752	$55,433	.....	$32,951	$806	2,021	$3,621	.....	$2,481	$314	$91	$81	$203	$2,501	$50	$2,653
75	$2,000	.....	.....	.....	167	$460	.....	.....	.....	.....	.....	.....	$1,255	$418	$599
1,992	24,175	.....	$867	.....	2,036	3,844	.....	$1,968	.....	.....	.....	.....	.....	.....	.....
531	4,281	.....	.....	.....	224	376	.....	.....	.....	.....	.....	.....	.....	.....	.....
290	2,598	$26	830	.....	62	142	.....	54	.....	.....	.....	.....	.....	460	.....
172	1,850	.....	2,949	.....	.....	.....	.....	.....	.....	.....	.....	.....	444	266	.....
100	1,427	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11	.....
6	53	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	1,356	.....	.....	.....	.....	60	.....	.....	.....	.....	.....	.....	.....
10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
45	215	.....	.....	.....	176	435	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	1,069	.....	897	.....	.....	.....	$32	.....	.....	.....	.....	.....	.....	.....	.....
3,221	$37,668	$26	$6,899	.....	2,665	$5,257	$32	$2,082	.....	$91	$81	.....	$1,699	$1,155	$599
72,426	$466,651	$20,094	$325,487	$25,160	76,091	$138,753	$3,129	$23,144	$4,828	$9,578	$29,846	$6,091	$44,956	$14,027	$47,593

United Kingdom Rubber Statistics

Imports

	January, 1923		January, 1924	
	Pounds	Value	Pounds	Value
UNMANUFACTURED				
Crude rubber				
From—				
Straits Settlements	6,101,400	£306,302	5,459,600	£334,644
Federated Malay States	1,506,500	81,057	2,128,700	132,319
British India	828,600	42,552	893,700	57,561
Ceylon and dependencies	2,417,900	109,584	1,659,000	103,813
Other Dutch Possessions in Indian Seas	84,000	4,833	258,300	16,408
Dutch East Indies (except Other Dutch Possessions in Indian Seas)	1,153,600	56,412	1,883,800	118,498
Other countries in East Indies and Pacific not elsewhere specified	69,800	4,337	46,800	2,728
Brazil	1,130,700	62,701	748,800	36,574
Peru	.....	.....	36,400	1,845
South and Central America (except Brazil and Peru)	5,600	150	.....	.....
West Africa				
French West Africa	66,400	3,335	95,100	3,325
Gold Coast	.....	.....	27,500	1,288
Other parts of West Africa	16,600	513	49,800	1,942
East Africa, including Madagascar	47,600	2,561	179,300	8,432
Other countries	75,100	3,380	7,000	390
Totals	13,503,800	£677,717	13,473,800	£819,767
Waste and reclaimed rubber	92,500	871	232,900	2,615
Gutta percha and balata	1,235,100	181,392	857,100	105,882
Rubber substitutes	2,200	49	.....	.....
Totals, unmanufactured	14,833,600	£860,029	14,563,800	£928,264
MANUFACTURED				
Boots and shoes...*doz. pairs*	14,809	£32,796	3,037	£13,053
Tires and tubes				
Pneumatic				
Outer covers	.....	230,880	.....	205,367
Inner tubes	.....	25,685	.....	49,137
Solid tires	.....	9,953	.....	18,868
Other rubber manufactures	.....	87,858	.....	88,865
Totals, manufactured	.....	£387,172	.....	£375,290

Exports

UNMANUFACTURED				
Waste and reclaimed rubber	789,000	£821,500	689,800	£623,000
Rubber substitutes	143,200	297,500	108,000	210,400
Totals, unmanufactured	932,200	£1,119,000	797,800	£833,400
MANUFACTURED				
Boots and shoes...*doz. pairs*	14,801	£26,832	15,330	£25,743
Tires and tubes				
Pneumatic				
Other covers	.....	143,203	.....	148,536
Inner tubes	.....	23,602	.....	28,254
Solid tires	.....	30,722	.....	24,188
Other rubber manufactures	.....	265,356	.....	221,743
Totals, manufactured	.....	£489,715	.....	£448,464

Exports—Colonial and Foreign

	January, 1923		January, 1924	
	Pounds	Value	Pounds	Value
UNMANUFACTURED				
Crude rubber				
To Russia	.....	.....	895,300	£50,361
Sweden, Norway and Denmark	77,100	£4,129	336,000	19,794
Germany	2,259,200	112,646	303,700	18,715
Belgium	263,600	15,031	307,100	16,534
France	2,517,900	145,243	3,083,000	180,788
Spain	60,800	3,691	53,900	2,630
Italy	776,600	39,521	754,500	43,920
Austria	.....	.....	.....	.....
Hungary	.....	.....	600	40
Other European countries	394,900	19,244	75,400	4,655
United States	1,745,400	85,058	8,819,800	525,707
Canada	2,200	150	1,063,400	67,446
Other countries	35,000	1,729	108,700	6,064
Totals	8,132,700	£426,442	15,801,400	£936,654
Waste and reclaimed rubber	3,600	57	20,200	359
Gutta percha and balata	75,000	12,489	64,200	6,711
Rubber substitutes	.....	.....	.....	.....
Totals, unmanufactured	8,211,300	£438,988	15,885,800	£943,724
MANUFACTURED				
Boots and shoes...*doz. pairs*	107	£348	146	£426
Tires and tubes				
Pneumatic				
Outer covers	.....	9,962	.....	16,036
Inner tubes	.....	1,110	.....	1,523
Solid tires	.....	874	.....	1,777
Other rubber manufactures	.....	3,740	.....	4,225
Totals, manufactured	.....	£16,034	.....	£23,987

Imports of Crude Rubber Into the United States by Customs Districts

	January, 1923		January, 1924	
	Pounds	Value	Pounds	Value
Massachusetts	1,434,957	$274,406	882,844	$209,549
New York	74,537,865	13,423,042	47,189,488	11,655,545
Maryland	2,004,793	268,338	.....	.....
Los Angeles	1,073,174	192,365	730,528	181,643
San Francisco	600,766	130,244	55,070	13,582
Colorado	112,065	22,430	.....	.....
Oregon	.....	.....	222,400	6,610
Totals	79,763,620	$14,310,825	49,080,330	$12,066,929

AUSTRALIA'S IMPORTATIONS FROM THE UNITED STATES OF leather cloth or artificial leather rose to a value in 1923 of $325,525, as compared with $222,308 in 1922. Similar importations in 1923 of waterproofed automobile cloth were estimated at $83,774, the total for 1922 being $65,892.

Crude Rubber Arrivals at New York as Reported by Importers

Parás and Caucho

	Fine Cases	Medium Cases	Coarse Cases	Caucho Cases	Cametá Cases
FEBRUARY 21. By "Camoens," Manáos.					
H. A. Astlett & Co.	90	10	134	7	...
General Rubber Co.	...	565	65	187	131
F. R. Henderson & Co., Inc.	...	...	...	34	...
L. Littlejohn & Co., Inc.	519	35	130	66	...
Meyer & Brown, Inc.	150	...	...	528	...
Poel & Kelly, Inc.	934	76	258	1	...
MARCH 2. By "Benedict," Pará and Manáos.					
H. A. Astlett & Co.	...	...	...	34	...
Paul Bertuch	298*	...	...	...	...
Paul Bertuch	124	...	...	3	...
General Rubber Co.	42	4	4	2	...
F. R. Henderson & Co., Inc.	...	...	...	67	...
L. Littlejohn & Co., Inc.	30	...	38	...	...
Meyer & Brown, Inc.	94	...	...	534	...
Poel & Kelly, Inc.	126	85	218	67	...
MARCH 6. By "Atalaid," Pará.					
H. A. Astlett & Co.	62	...	...	...	...
MARCH 14. By "Polycarp," Brazil.					
H. A. Astlett & Co.	34	5	1	...	...
General Rubber Co.	8	...	129	349	...
L. Littlejohn & Co., Inc.	254	27	204	158	...
Poel & Kelly, Inc.	201	44	196	319	...

* Biscuits.

Plantations

FEBRUARY 20. By "City of Athens," Singapore.

H. A. Astlett & Co.	2,356 cases
H. A. Astlett & Co.	*262 cases
Hood Rubber Co.	1,015 pkgs.
Meyer & Brown, Inc.	945 cases
H. Muehlstein & Co., Inc.	780 cases
Wm. H. Stiles & Co.	1,128 cases
Chas. T. Wilson Co., Inc.	105 cases

FEBRUARY 20. By "President Polk," London.

Fisk Rubber Co.	115 cases
F. R. Henderson & Co., Inc.	96 cases
Chas. T. Wilson Co., Inc.	279 cases

FEBRUARY 21. By "Verbania," Europe.

L. Littlejohn & Co., Inc.	387 cases

FEBRUARY 22. By "London Commerce," Europe.

L. Littlejohn & Co., Inc.	10,248 cases

FEBRUARY 23. By "Mercian," Liverpool.

Paul Bertuch	40 cases
Chas. T. Wilson Co., Inc.	34 cases

FEBRUARY 24. By "Nevisian," London.

Paul Bertuch	208 cases
General Rubber Co.	173 cases
F. R. Henderson & Co., Inc.	158 cases
L. Littlejohn & Co., Inc.	4,867 cases
Vernon Metal & Produce Co., Inc.	35 cases
Chas. T. Wilson Co., Inc.	44 cases

FEBRUARY 25. By "Calchas," Far East.

H. A. Astlett & Co.	1,431 cases
H. A. Astlett & Co.	*450 cases
Baird Rubber & Trading Co., Inc.	980 cases
Paul Bertuch	168 cases
Fisk Rubber Co.	4,329 cases
General Rubber Co.	2,250 cases
F. R. Henderson & Co., Inc.	218 cases
Hood Rubber Co.	*290 pkgs.
J. T. Johnstone & Co., Inc.	1,321 cases
L. Littlejohn & Co., Inc.	9,894 cases
Meyer & Brown, Inc.	2,783 cases
H. Muehlstein & Co., Inc.	197 cases
Poel & Kelly, Inc.	3,030 cases
Fred Stern & Co., Inc.	1,075 cases
Vernon Metal & Produce Co., Inc.	771 cases
Chas. T. Wilson Co., Inc.	1,907 cases
Chas. T. Wilson Co., Inc.	*39 bales
Wm. H. Stiles & Co.	431 cases

FEBRUARY 26. By "Authenia," London.

Poel & Kelly, Inc.	1,672 cases

FEBRUARY 26. By "Steel Inventor," Far East.

H. A. Astlett & Co.	695 cases
Baird Rubber & Trading Co., Inc.	70 cases
Paul Bertuch	100 cases
H. A. Astlett & Co.	*262 cases
L. Littlejohn & Co., Inc.	4,072 cases
Meyer & Brown, Inc.	1,162 cases
H. Muehlstein & Co., Inc.	140 cases
Poel & Kelly, Inc.	1,749 cases
Wm. H. Stiles & Co.	311 cases
Fred Stern & Co., Inc.	116 cases
Vernon Metal & Produce Co., Inc.	390 cases
Chas. T. Wilson & Co., Inc.	853 cases

*Arrived at Boston.

FEBRUARY 26. By "Veendam," Amsterdam.

H. A. Astlett & Co.	235 cases

FEBRUARY 29. By "Eastern Prince," Far East.

H. A. Astlett & Co.	1,848 cases
Baird Rubber & Trading Co., Inc.	850 cases
General Rubber Co.	669 cases
F. R. Henderson & Co., Inc.	50 cases
Hood Rubber Co.	*1,024 pkgs.
J. T. Johnstone & Co., Inc.	950 cases
L. Littlejohn & Co., Inc.	8,639 cases
Meyer & Brown, Inc.	1,937 cases
H. Muehlstein & Co., Inc.	1,907 cases
Poel & Kelly, Inc.	2,211 cases
Fred. Stern & Co., Inc.	2,624 cases
Wm. H. Stiles & Co.	1,744 cases
Vernon Metal & Produce Co., Inc.	340 cases
Chas. T. Wilson Co., Inc.	2,332 cases

FEBRUARY 29. By "Virgilia," London.

H. A. Astlett & Co.	*114 cases
Meyer & Brown, Inc.	557 cases
Vernon Metal & Produce Co., Inc.	*78 cases

MARCH 1. By "City of Pittsburg," Far East.

J. T. Johnstone & Co., Inc.	86 cases
L. Littlejohn & Co., Inc.	658 cases
H. Muehlstein & Co, Inc.	630 cases

MARCH 2. By "Vardulia," London.

Paul Bertuch	16 cases
F. R. Henderson & Co., Inc.	86 cases
L. Littlejohn & Co., Inc.	921 cases
Poel & Kelly, Inc.	965 cases
Vernon Metal & Produce Co., Inc.	340 cases

MARCH 3. By "Barbodian," Singapore.

Chas. T. Wilson Co., Inc.	148 cases

MARCH 3. By "Suveric," Far East.

General Rubber Co.	1,000 cases
J. T. Johnstone & Co., Inc.	56 cases
L. Littlejohn & Co., Inc.	2,021 cases
Poel & Kelly, Inc.	112 cases
Wm. H. Stiles & Co.	191 cases
Vernon Metal & Produce Co., Inc.	216 cases
Chas. T. Wilson Co., Inc.	388 cases

MARCH 4. By "London Mariner," Europe.

L. Littlejohn & Co., Inc.	4,088 cases

MARCH 4 By "Samland," Antwerp.

H. A. Astlett & Co.	57 cases
Meyer & Brown, Inc.	655 cases

MARCH 10. By "Halerie," Far East.

Baird Rubber & Trading Co., Inc.	647 cases
Hood Rubber Co.	*79 pkgs.
L. Littlejohn & Co., Inc.	1,196 cases
Poel & Kelly, Inc.	450 cases
Chas. T. Wilson Co., Inc.	224 cases

MARCH 10. By "Vechtdjk," Far East.

H. A. Astlett & Co.	152 cases
H. A. Astlett & Co.	51 cases
Baird Rubber & Trading Co., Inc.	60 cases
General Rubber Co.	3,996 cases
Adolph Hirsch & Co., Inc.	331 cases
Hood Rubber Co.	218 pkgs.
Hood Rubber Co.	*112 pkgs.
J. T. Johnstone & Co.	204 cases
L. Littlejohn & Co., Inc.	2,778 cases
Meyer & Brown, Inc.	32 cases
H. Muehlstein & Co., Inc.	896 cases
Poel & Kelly, Inc.	1,853 cases
Fred Stern & Co., Inc.	136 cases
Vernon Metal & Produce Co., Inc.	34 cases
Chas. T. Wilson Co., Inc.	676 cases

MARCH 11. By "Biyo Maru," Singapore.

H. A. Astlett & Co.	791 cases
L. Littlejohn & Co., Inc.	7,089 cases
Poel & Kelly, Inc.	1,103 cases
Vernon Metal & Produce Co., Inc.	105 cases
Chas. T. Wilson Co., Inc.	1,715 cases

MARCH 11. By "Cedric," Liverpool.

Paul Bertuch	50 cases

MARCH 11. By "City of Adelaide," London.

H. A. Astlett & Co.	245 cases
F. R. Henderson & Co., Inc.	*79 cases
Hood Rubber Co.	*90 pkgs.

MARCH 12. By "President Monroe," London.

F. R. Henderson & Co., Inc.	18 cases

MARCH 15. By "Montauk," Antwerp.

H. A. Astlett & Co.	68 cases
Meyer & Brown, Inc.	5,732 cases

MARCH 17. By "Havre Maru," Far East.

L. Littlejohn & Co., Inc.	280 cases
Meyer & Brown, Inc.	700 cases
Fred Stern & Co., Inc.	400 cases

Africans

FEBRUARY 25. By "Sarcoxie," Bordeaux.

Poel & Kelly, Inc.	480 bags

FEBRUARY 26. By "Athenia," Liverpool.

Poel & Kelly, Inc.	1,526 bags

MARCH 12. By "Cameronia," Liverpool.

Poel & Kelly, Inc.	13 casks

Balata

MARCH 2. By "Benedict," Manaós.

Paul Bertuch	5 cases

MARCH 10. By "Mayaro," French Guiana.

Middleton & Co., Ltd.	22 bales

MARCH 14. By "Polycarp," Manaós.

Paul Bertuch	50 cases

Guayule

MARCH 3-17th. By "Railways," Mexico.

Continental Rubber Co.	1,000 cases

Rubber Latex

FEBRUARY 25. By "Calchas," Calicut.

Vernon Metal & Produce Co., Inc.	328 gals.

Brazilian Rubber Exports, 1918-1922

The following table indicates the quantity and value of rubber exported from Brazil during recent years. It will be noted that the figures for the year 1922 show a considerable improvement over those for 1921.

Ports of Shipment India rubber (Hevea).	Quantity					Value F. O. B. †Milréis Paper				
	1918	1919	1920	1921	1922	1918	1919	1920	1921	1922
Manáos	8,255,754	13,999,389	11,677,754	9,663,013	10,123,693	28,040,599	47,572,459	30,224,072	20,452,519	25,852,736
Pará	13,523,585	17,763,054	10,930,743	7,258,778	8,963,223	42,474,083	53,854,334	25,913,457	13,994,117	19,849,016
Corumbá	268,058	244,662	145,690	97,733	109,566	1,197,100	926,060	494,443	282,773	217,642
Various	163,519	206,206	122,136	51,345	15,942	831,463	867,148	341,592	89,941	36,560
Total kilog.	22,210,916	32,213,311	22,876,323	17,070,869	19,212,424	72,543,245	103,220,001	56,973,564	34,819,350	45,955,954
Equivalent in pounds sterling...						3,932,567	6,101,791	3,636,532	1,195,446	1,328,685

†The normal value of the milreis is .54 + cents, United States currency.

Radial Cord Tire Construction

By John A. Christie[1]

It is a well recognized fact that most motorists commonly disregard the high pressures recommended by tire makers and for sake of riding comfort use their tires at somewhat lower inflation.

It was this fact that led tire engineers to develop the low pressure or balloon tire, which has found ready acceptance with automobilists generally.

While balloon tires differ much in proportions, design and construction from ordinary standard cords they resemble the latter in the fact that the cords of alternate bias plies cross each other at right angles. However well insulated with rubber the individual cords may be, the fact that they cross renders possible more or less cutting action between cords of adjacent plies. Under the increased freedom of flexing characteristic of balloon tire construction it is a question whether sufficient internal heating may not develop to the detriment of the tire by damage to the cords leading to disintegration of the tire structure. It was with this contingency in mind that a special cord construction has been developed and patented.[2]

The Loair Clincher Cord Tire

In cord tire types manufactured thus far, the usual practice is to build the carcass by putting the cords at various angles to the bead of the tire. The cords are usually applied at an angle of 45 degrees, and alternate plies or pairs of plies cross one another to balance the tractive strain of the various members.

This practice involves a defect in principle which leads to many tire failures. If we consider what occurs with every individual cord in any ply as the wheel revolves and places it in position on the road to take the load, it will be found that as a cord is compressed by the load this cord is crossed by other cords which have been released from the load strain and are being pushed back into normal position by the confined air. This results in a constant sawing action between the cords of alternate plies which converts part of the power delivered to the wheel into heat, which is lost. If the tire is overloaded or underinflated, this loss becomes quite perceptible. Then follows disintegration of the carcass of the tire by the effect of heat on the rubber binding the plies together.

Consideration of this principle thus shows that underinflation is very destructive to tire durability. If the air capacity is increased at the same time that the pressure is reduced, the results are not so disastrous, and it is upon this principle that the development of balloon tires has been based. However, if sufficient pressure is not maintained in the balloon tire, or if the increase in cross-section is not sufficient to take care of the lower inflation pressure, the injurious effects of crossed cords will follow. In fact, this is more certain to cause trouble because of the thinner and more flexible carcass of a balloon tire.

A radical departure from the usual cord construction has been effected by building tires with multiple plies of cord fabric in which the cords are all parallel to each other and placed radially to the tire circumference; that is to say, the cords pass across the carcass at right angles from bead to bead. Therefore cords do not cross one another; instead they are perfectly free to flex independently of adjacent cords, as the load passes over them.

The result is that the tire develops no power losses and runs cool even under heavy load and low air pressure. It is therefore not necessary to resort to large sections excessively overhanging the rim to eliminate disintegrating effects developed in regular cords. A radially built tire gives all the riding comfort afforded by the balloon type without resorting to large cross-sections.

In radial cord construction the three chief known advantages of the balloon idea are attained, namely: (1) increased traction on account of larger road contact; (2) easier riding qualities; (3) added cushioning to the car, and greater resultant longevity.

[1] Factory and production manager, The Star Rubber Co., Inc., Akron, Ohio.

[2] United States Patent No. 1,442,293. Fred B. Pfeiffer, assignor to the Star Rubber Co., both of Akron, Ohio.

CHILE'S IMPORTS OF AMERICAN MECHANICAL GOODS

Chile has made great advances during 1923 in her purchases of American mechanical rubber goods. Importations of belting, which in 1922 were valued at only $61,094, were more than tripled during 1923, the figure being $206,659. Packing more than doubled in value also, the 1923 estimate being $17,077, as compared with $6,141 for 1922. There was a slight falling off, however, in the figures for hose, the 1923 total being $76,155, as compared with $81,606 in 1922.

The purchase for last December alone of belting amounted to $63,288, more than the total value for such importations during the entire year of 1922.

M. & A. M. A. ADDITIONAL EXECUTIVES

The Motor & Accessory Manufacturers' Association will increase its services to the automotive industry as a whole through the appointment of two new executives who will keep in touch with representative manufacturing concerns in the various automotive centers.

J. Ross Jennings, for fourteen years associated with the industry and formerly connected with the Automotive Equipment Association of Chicago, will succeed A. W. Barber as field secretary, while the latter will cooperate closely with the credit department of the organization, and make a special study of present conditions in manufacturing centers and the automotive field in particular.

JAPAN HAS LARGELY INCREASED HER PURCHASES OF AMERICAN mechanical rubber goods during the year 1923, as compared with the twelve months previous. In both rubber belting and hose the 1923 values, at $40,576 and $44,323 respectively, are more than double those for 1922, at $18,977 and $18,047. Japanese importations during 1923 of rubber packing were valued at $92,589, as compared with $70,218 in 1922.

"PNEUMATIC TIRES," "CRUDE RUBBER AND COMPOUNDING INGREDIENTS," and "RUBBER MACHINERY," by Henry C. Pearson, cover these subjects in a comprehensive and authoritative manner. They should be in the library of every progressive rubber man.

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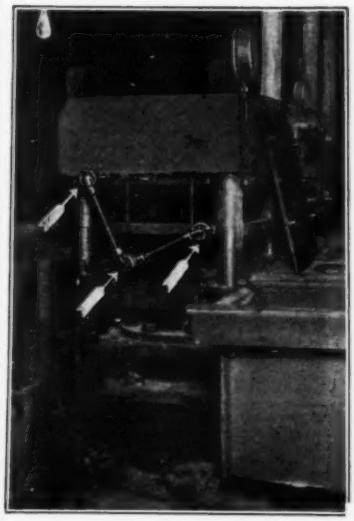

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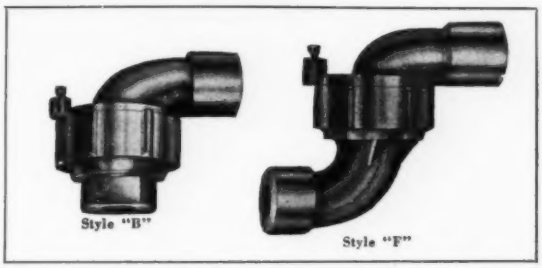

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